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ANNUAL REPORT

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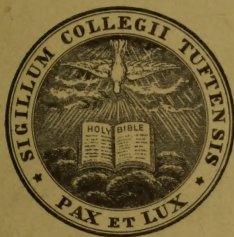
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TUFTS COLLEGE

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PRESIDENT'S REPORT.

TO THE HONORABLE AND REVEREND
THE TRUSTEES OF TUFTS COLLEGE:

GENTLEMEN,—The President of the College has the honor to submit the following Report for the academic year, 1891-92, namely, from September 17, 1891, to September 22, 1892.

No member of the Corporation has died during the year. It is proper, however, to mention the death of William H. Finney, who resigned his office as a Trustee but a short time before his death, and only a few weeks before the beginning of the academic year. Mr. Finney was elected to the board in 1876, and very shortly thereafter became Treasurer, discharging the duties of that position for about ten years. His term of service covered the period of great depression in the business world, which was also a time of much anxiety in the management of the financial interests of the College. His business training had been thorough, and in the performance of his duties he manifested good judgment, painstaking faithfulness, patience, cheerfulness, and courage. The work he did deserves the grateful recognition, not only of the Corporation, but of all the friends of the College.

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Re-appointments for the year have been made as follows :

Anson B. Curtis, Ph.D., Instructor in Hebrew.

Frank W. Durkee, A.M., Director of the Gymnasium, Instructor in Natural History and Assistant in Chemistry.

Frank Pierrepont Graves, Ph.D., has been raised from the position of Instructor to be Assistant Professor of Greek.

The following new appointments deserve mention :

A chair of History having been created, Edwin A. Start, A. B., has been appointed Instructor in History for a term of three years. J. S. Kingsley, Sc.D., has been chosen Professor of Biology. A new chair is thus added, rendered imperative by the expansion of the department of Natural History. The work in Modern Languages having increased so much of late that a single professor is no longer equal to it, Leo R. Lewis, A. M., has been appointed Instructor in French. The Rev. T. J. Sawyer, D.D., by reason of his great age, has resigned as Dean of the Divinity School, and has been made Packard Professor of Theology Emeritus. The Rev. Charles H. Leonard, D.D., has been appointed Dean of the Divinity School in the place of Dr. Sawyer, resigned. Frank T. Daniels, A.M.B., has been appointed Instructor in Engineering. George A. Arnold, B.Ph., has been appointed Assistant in the Library in the place of Willis F. Sewall, A.B., whose term of office has expired.

The number of students admitted to the College in all departments is seventy-one. They are distributed as follows :—

Senior	1
Freshmen	27
First Engineering	28
Special Students	2
Divinity School	13
Total	71

The number of degrees given in course at the last Commencement was forty-one, as follows :—

Bachelor of Arts	15
Bachelor of Philosophy	2
Bachelor of Mechanic Arts	13
Master of Arts	4
Bachelor of Divinity	7
Total	41

The number of students enrolled in the College is one hundred and seventy-six. This is eighteen more than have ever been enrolled at one time before. The size of the incoming classes will make the next year's enrolment considerably larger than this. The rooms recently occupied in West Hall by the Divinity School have been vacated, and are now fitted for the reception of students in the College of Letters. These rooms are already engaged, and the indications are that our dormitory accommodations will barely suffice for another year. Additional rooms will be needed by the beginning of the college year 1893-94.

In my last Report I had the honor to announce the gift of a building for the Divinity School by the Rev. A. A. Miner, D.D., LL.D., the ex-President of the College. A subscription was then in progress for a dormitory. The Miner Theological Hall was erected during the autumn and winter of the academic year, and was solemnly dedicated on the 13th of June last. It is a beautiful structure, on a beautiful and commanding site. It is admirably adapted to the objects for which it is designed, and will serve the needs of the Divinity School for a recitation-hall for many years to come. It may not be out of place in this connection to say that it is not less fitting than fortunate that one who has served the College with distinction in so many ways, who has been intimately associated with it, in some sense a part of it,

from its inception, and during whose administration as president the Divinity School was established, should be the donor of the first and most important building for that School.

The subscription for a dormitory, which was already more than half completed at the time of my former Report, has been pushed with energy by Dr. Leonard, and is entirely successful, enough being obtained not only to erect, but also to furnish, the building. To this structure the name of Paige Hall has been given by the Trustees, in honor of Lucius R. Paige, D.D. Not only the eminence of Dr. Paige as a clergyman in that branch of the Church which the Divinity School is designed to serve, but his relations to the College, official and otherwise, and the aids he has given to it, both of time and money, make this, it is universally conceded, a most appropriate designation.

These needs of the Divinity School, which have long been among the more pressing, having been so fully and generously met, attention can now be given to others that are scarcely less important. As I have remarked above, the relief afforded by the removal of the Divinity School to quarters of its own can be but temporary. All the rooms at our disposal will be required by the students of the incoming classes. By the autumn of 1893 the College will be under the necessity of furnishing rooms for at least twenty-five more men than we can now lodge. Measures must be taken immediately looking to this necessity.

The demand for increased accommodations for our scientific department becomes more emphatic every year. The number of students is increasing very rapidly, more rapidly than in any other department of the College. The engineering courses have been expanded and strengthened. The term of residence for the engineering degrees has been extended from three to four years. This alone will

increase the number of students in engineering by fully one quarter. Whoever, therefore, is familiar with the nature and methods of instruction in engineering subjects will perceive how great is the pressure for better laboratory facilities. We require more room, more apparatus, and a more compact organization of the facilities. We ought to have two scientific buildings, one for physics and chemistry exclusively, and one for engineering. In one respect, perhaps, we are destined to have some slight relief ere long. For a portion of our instruction we have been obliged to make arrangements this year with the Rindge School in Cambridge. We have also negotiated with the authorities of that school for help during the coming year. But this is extremely inconvenient, because of its distance from the College. It is gratifying to be able to report that steps have been taken towards the maintenance of a school on our own grounds. The Rev. Dr. Miner, the executor and trustee of the estate of the late Henry B. Pearson, has in his hands a sum of money for the establishment of a school which, when organized, he is to turn over, for administration, to the Trustees of Tufts College. It is his intention to erect a building that, in addition to its other fittings, will contain an equipment for the industrial and technical training now assuming so much importance in education. Such a school, while giving preparation for entrance to our scientific courses, will offer many much-needed facilities to our own engineering students.

An engineering building is desirable for other reasons. While it is exceedingly important to the efficient employment of our teaching force that we should have laboratories specially designed for the various departments of science, it is still more important to relieve the pressure upon Ballou Hall. Apart from the laboratories, every room in that

building is needed for lectures and recitations. Even then there would be scarcely a sufficient number to give each instructor a room for himself. Certainly the opportunities are abundant for those who have the requisite means to do a great work for learning, by giving us the equipment that will render our teaching easy and effective.

The executors of the will of the late P. T. Barnum have paid into the treasury the amount of his bequest, — forty thousand dollars. As this was given for a specific purpose, — the erection of the wings to the Barnum Museum of Natural History according to the original plan, — it will become necessary soon to study plans of addition having reference both to the exhibition of specimens and to instruction in natural history.

The College has made a significant departure in the admission of women to all its courses, on the same terms as men. The step, however, has not been taken hastily. It has been long in contemplation, and carefully considered. The time seemed to be ripe for it. To have delayed longer would not have been to our advantage. The announcement of the decision of the Trustees was not made until well into the vacation; therefore it is not likely that women in considerable numbers will apply for admission for the next college year. There may be ten young women in all departments, but this number will occasion no embarrassment. By another year, however, we may look for at least twenty-five who will expect to reside at the College. This gives rise to a new necessity. I am confident that the friends of co-education and of the education of women at Tufts College will take measures to meet it. The development of the plan for the residence of women is a matter of serious importance. My own conviction, from the study I have been able to give to the subject, is that as much of the

home life as is practicable should be carried forward for young women into their college experience. In this view of the case, it would be unwise to have large dormitories. One central building of considerable dimensions might be erected to begin with. Around that might be grouped smaller houses, in no one of which should there be lodged at one time more than from sixteen to twenty young women. But the demand for the carrying out of some plan is upon us, and it must not be delayed.

Next year we shall begin to receive students on the new course for which the degree of A.B. is offered. This course accepts students who have met certain specified requirements in modern languages, instead of the customary requirement in Greek. This is an important modification of the curriculum of study,—almost a challenge of the traditions of superior education. But that it has the approval of progressive minds and meets a real want on the part of those who are in pursuit of the higher education, is shown by the fact that other New England colleges are preparing to follow our lead.

Still, this is only one step which the colleges ought, in my judgment, to take in the interests of higher education for all the people. Owing to the fact that the colleges for the most part are endowed institutions, they have taken but little interest in the education of the masses, especially in the lower grades of instruction. Latterly, however, there are signs that the colleges are beginning to awake to a sense of their responsibility for education in general. Already there has come to be a tolerably close bond between the colleges and the secondary schools in matters pertaining to the conventional curriculum. This, however, is but a fractional part of the work of the secondary schools. In the public high schools only a small per-

centage of the pupils take what is called the college course. The great body of them pass through a variety of courses in the English department. In most instances, no doubt, these courses are taken in the beginning, from the lack of intelligent direction. It often happens, therefore, that many of the brightest and most promising pupils of this class reach the point of their graduation with the thirst for higher knowledge and broader training just beginning to awake. In a paper of masterly power, — a paper so significant that the Secretary of the Massachusetts State Board of Education has seen fit to include it among the documents that constitute the Annual Report of that body, — Mr. Frank A. Hill, the head of the English High School of Cambridge, has shown the utter hopelessness of this class of pupils. The road over which they have travelled comes to an abrupt termination. They have a choice of only two courses. They may branch off on one side to the business of life, or on the other to a professional or technical school. It is not surprising, therefore, that a very great and constantly increasing number of young persons are using the technical school as a substitute for the college.

Gen. Francis A. Walker, who is at the head of the most important technical school in the country, has attempted recently to show that the work of the technical school has the same value substantially in the disciplinary and educational sense as work of the more conventional sort. It must be admitted that there is much force in the argument; for it is generally conceded now that education reaches its highest achievement in enabling men to observe facts with accuracy, to describe them, to put them in their proper relations, to perceive their significance, and, above all, to detect from the scrutiny of them the principles that underlie them or to which they give support. In this view of

the case, it cannot make much difference whether the facts to be studied are the facts of the physical universe or the facts of consciousness, the facts of mathematics or the facts of a dead language. This, however, is not the whole case. The real question is as to place and conditions; in other words, whether the study that is to carry the intellectual powers of men to the highest development can be carried on better in the "bread and butter" atmosphere of a technical school, or in the liberal atmosphere of a college. To this question there can be but one answer.

If the colleges, therefore, would serve the highest public necessity, they should immediately arrange to take pupils of high attainment and intellectual character from the English high schools or from the English departments of high schools. They should lay out courses of study for them at once broad and strong, covering as wide a field and requiring as long a time for their completion as the existing college courses, and they should offer the same rewards for the faithful performance of the work. With the immense increase of human learning during the last fifty years, with the many branches of knowledge that have received an almost complete development within that time, — branches, too, requiring the utmost efforts of trained specialists of high skill for their mastery, — it cannot be that scholarship would be lowered or that learning would suffer detriment from such a movement. On the contrary, both learning and scholarship would be increased and exalted, while the ranks of their devotees would be conspicuously and honorably enlarged.

There is one other subject that deserves the serious attention of college authorities. Forty years ago, in the public schools, the graded system was looked upon by those who were most influential in directing the educational move-

ments of the country as the one thing most to be desired. Its establishment would bring in the millennium of education. But after much experience and wide observation, the leaders of educational thought in our time have come to perceive that advancing pupils by grades is a pernicious and evil practice, and that in this way, in the first place, a great wrong is done to those whose period of education is limited, and, in the second place, a great peril is incurred by all the pupils in the motive and impulse of education.

It requires no argument to prove that attainment, and not years of study in a given grade, is the true ground of promotion. But if this is true in the domain of elementary education, it must be equally true in the higher ranges. The colleges have made a hard-and-fast rule of four years' study for all men. The industrious and the lazy, the brilliant and the stupid, are held inflexibly to the same time limit. There may have been a show of reason for this arrangement so long as the college curriculum was a thing fixed and rigid. There was some justice in insisting that every man should cover the entire course, and that those of more rapid gait should moderate their paces for those who were slower and duller to come up. But now that the curriculum has become elastic, that departments and courses have been increased and broadened, that opportunities and incentives to effort have been multiplied, and that election, even in the most conservative institutions, has made such distinct modifications of required work, there would seem to be no longer any reason for holding undergraduates to the same limit of time. A far more rational method would be to set a certain number of subjects or courses as the conditions precedent to a degree. These, perhaps, might be arranged in groups with an orderly sequence that would preserve some resemblance to our present classification. But the

vital point in the needed reform is that the student, on the attainment of a specified rank in any group of studies, should be permitted, and even encouraged, to go forward at whatever rate of progress he can establish and maintain. The colleges ought certainly to make this change now that they are calling upon the public schools to abolish the graded system. The change should be made, moreover, in the interest of that freer and quicker movement in education which from so many quarters is now demanded. Nor should it be forgotten that it is most of all desirable on account of the spur that would thus be given to studious effort. We should then find many ambitious men doing in three years work that it now takes them four years to accomplish. Thus one of the strongest objections offered to the higher education, on account of the delays it imposes, would be overcome.

I desire to call attention to the specific reports of the several departments of instruction.

The work done in the Latin department was substantially the same as heretofore. The sophomores read the Odes of Horace, Cicero's *Laelius de Amicitia*, the *Adelphi* of Terence, and the *Germania* and *Agricola* of Tacitus, and had one exercise a week in translating English into Latin. Several members of the class took a seminary course in the history of architecture and sculpture, meeting once a week. The freshmen read the twenty-first book of Livy, Cicero's *Cato Major de Senectute*, and the *Satires* of Horace, and recited twice a week in Roman history and antiquities, using Liddell, Rawlinson, and Ramsay as text-books, and doing some written work on topics suggested by their reading of the Latin authors. They also had one exercise a week in translating English into Latin. One senior and

two juniors read the *Adelphi* of Terence, and selections from Juvenal and Pliny.

In the department of Greek four hours a week, all devoted to reading, were regularly allotted to the sophomores. A course having reference to Greek orators was first taken up. The class read, and reviewed with care, the orations of Lysias selected by Dr. Whiton, and the oration of Andocides on the Mysteries, as given in the Hickie edition. This reading was accompanied and supplemented by lectures on Greek law and life, on the rise and development of oratory, and on the lives, style, works, and influence of the ten Attic orators. A short course in Greek drama followed. The class read and reviewed rapidly the *Œdipus Rex* of Sophocles, and a few lectures on the construction of the Attic theatre, on the development of Greek drama, and on the four great representatives of Attic drama, were delivered. In addition, an elective class read at sight the *Alcestis* of Euripides and the *Philoctetes* of Sophocles.

Six hours a week for the first half year and five for the second half year were regularly devoted to the freshmen. During both terms one hour a week was used for Greek composition and special grammatical drill. The rest of the time was allotted to reading. For the first term the first two books of Xenophon's *Memorabilia* were carefully read and discussed, and the sixth book of Herodotus, with selections from the seventh, was translated and reviewed. The second term was occupied with the study of the Phæacian episode of the *Odyssey* (books vi., vii., viii., and selections from xi. and xiii.), and of Sophocles' *Antigone*. During the year a number of lectures were given on the other works and the lives of the authors read, on the peculiarities of the several dialects, and on the portions of Grecian history touched upon. Most of parts i. and ii. of Allinson's

Greek Prose Composition was rendered into Greek in the course of the year. In the first term an elective class read at sight books xvi. and xx. of Homer's Iliad, and a larger section did special work in Greek history during the second term. These men finished Smith's larger History of Greece, and did a little with Grote and Curtius on special topics. All the foregoing work in Greek was done with Mr. Graves.

The regular elective classes were conducted by Professor Schneider. Seven sophomores recited three times a week during the second half year. The text-books were the Clouds of Aristophanes, the Idyls of Theocritus, and, for sight-reading, sections of Herodotus. One senior recited three times a week during the year. The text-books were Æschylus' Agamemnon; Life of the Greeks and Romans, by Zuhl and Kohner; Isocrates' Panegyricus (sight-reading); Demosthenes' Philippics; Æschylus' Seven against Thebes.

The most marked changes in the department of Mathematics have been the appointment of a new Walker Instructor, the increase in the requirements for admission to the engineering department by the addition of solid geometry, the election of calculus by three members of the sophomore class, and a change in the manner of dividing the classes into sections. As the number of classical students in the entering class was nearly the same as the number of engineering students, it was thought best to divide so that one division should contain only the engineers. The latter were assigned to Mr. Sanborn. In the future such a method of division will be necessary, as the engineers will enter with a larger amount of mathematics than the classical students. The studies of the several classes have been the same as in the year just preceding. The freshmen have studied algebra, solid and spherical geometry, and trigonometry,

covering as much ground and doing the work about as well as former classes. The sophomores did the usual amount of work in analytic geometry. Three members of this class, who from the beginning of their course had shown remarkable aptitude for mathematical studies, elected the calculus for the second half year, and with one engineer took, as an extra study, advanced analytic geometry, meeting the professor three times a week for the second half year. The second-year engineers began the study of the calculus at the middle of the year, and recited three times a week. The third-year engineers continued the study of the calculus throughout the year, having three exercises a week. The endeavor has been to make as much advance in each study as possible to the poorest students, without allowing their incompetence to check the progress of the class. As in all previous years, some members of each class have done their work very unsatisfactorily, — from lack of special faculty, which is commonly supposed to be necessary for success in the study of mathematics, or from a strong dislike for the studies, — while the majority have done very good work, and some have shown a gratifying enthusiasm in their studies.

The Walker Special Instructor had during the first half year twenty-eight entering engineers in algebra and physical arithmetic; also a division of second-year engineers and sophomores — fifteen in all — in spherical trigonometry and analytic geometry. During the second half year the first-year engineers continued mathematics, twenty-three men taking spherical geometry and plane and spherical trigonometry. Four first-year civil engineers had surveying by text-book, supplemented by field-work. The time given to the foregoing was for the first-year men six hours a week, and for the second-year men four hours a week.

The same instructor had charge likewise of the drawing, as follows: first year, civil engineers six hours a week actual time, for the year, in geometric and orthographic drawing; second year electricals, four hours a week in descriptive geometry, problems in detail and assembly drawing from free-hand sketches and measurements made by the students themselves from the object, tracing and blue-print work, and one sheet of cam drawing; third year, electricals, four hours a week throughout the year in drawing of boiler settings from blue-prints, and detail and assembly drawings from the student's own freehand sketches and measurements of objects.

The work in the department of Civil Engineering has not differed materially from that of previous years. Some few changes have been made in text-books, and a greater number of examples in recent engineering practice have been reviewed. In the drawing and field exercises a more advantageous distribution of work has been possible, and the results to both teacher and student correspondingly improved. In the branches of applied mechanics,—bridges, hydraulics, steam, and railroads,—the facts and application of principles could be more clearly and easily brought to the comprehension of the student if there were a suitable collection of apparatus and instruments specially designed, provided, of course, there were an increased number of lecture or recitation rooms. At present the almost constant occupancy of a room by different instructors with their classes, precludes the previous preparation of apparatus for experiment or illustration, one instructor waiting at the door of the lecture-room for the other to come out, and, as soon as the hour has expired, hastening to give place to another class and instructor. The carpentry work has been done in very inadequate quarters by an instructor at the College, while

the machine instruction has been given at the Rindge Manual Training School of Cambridge, under experienced instructors, where there is every facility for doing excellent work. The department notes with satisfaction the prospect of a school of similar character in immediate connection with the College, where the students can have wood-working, forging, and machine work taught with the best facilities and under the most favorable conditions.

In the department of Chemistry during the year the usual course of lectures and recitations in general chemistry was given to the junior and first-year engineering classes. For the first time experimental work in the laboratory was made a required part of the course; and the results obtained by thus supplementing the lectures and recitations by a practical knowledge of the laws and substances treated, were in every way satisfactory. Every desk in the laboratory was occupied. An advanced course in qualitative analysis (course 3 in the catalogue) was given to two seniors during the first term, and an experimental course in quantitative analysis (course 4 in the catalogue) was taken by one senior. During the second half year instruction was given to one senior and two first year engineering students in elementary qualitative analysis (course 2 in the catalogue). An advanced course in quantitative analysis (course 5 in the catalogue) and an experimental course in organic chemistry (part of course 6 in the catalogue) were given to one senior, to whom honors in chemistry were awarded at Commencement.

The Instructor in Chemistry taught general chemistry in the laboratory four hours a week the first half year, prepared and arranged the reagents used by the students, and kept an account of the apparatus each student had during the term, and of what he returned at the end of the course.

The last half year he taught qualitative analysis in the laboratory six hours a week, prepared the solutions for analysis, and had charge of the reagents and apparatus as in the first half year.

In the department of Physics and Astronomy the juniors, with the second engineering class, met three times a week through the year, and the subjects treated by recitations and lectures were on the properties of matter, heat, light, electricity, and sound. These were illustrated by experiment as fully as the resources of the department permitted. The seniors had astronomy twice a week through the first half year. An elective class of eleven students attended a course of lectures on the conservation of energy twice a week through the first half year, and this was followed by a critical reading of Spencer's First Principles during the second half year.

Instruction in the department of Electrical Engineering differed from that of the year immediately preceding only by the addition to the list of text-books of Fleming's treatise on The Induction of Electric Currents. Three hundred and twenty-five pages of this rather difficult work were carefully read and intelligently discussed by the third-year electrical engineers. Several valuable and useful instruments have been added by purchase to the electrical apparatus. We are also indebted to several gentlemen for valuable gifts. Dr. Mason, of the Simplex Electrical Company, has given us wire. We have received through Mr. Frank E. Huntress, of the Wrought Iron Castings Company, over six hundred pounds of wrought iron castings. But the chief addition to the equipment of the department is due to the generosity of the Hon. Charles Whittier and others, and consists of the following machine tools: —

One Putnam Planer.

One 15'' Flatther Lathe, with Turret.

One 15'' Henly Shaper.

One 32'' Wood and Light Drill.

One Lathe and Morse Speed Lathe.

One Wilkinson Speed Lathe.

One No. 3 Brainard Universal Milling Machine.

One Diamond Grinder.

Several boxes of tools, including Chucks, Cutters, etc.

These tools, together with the counter-shaftings, pulleys, belts, etc., are now in place and nearly ready for work. This outfit of machine-tools supplies a long-felt want, and by their aid we shall now be able to construct almost any kind of apparatus for special experiment or for daily service, though unfortunately the cramped quarters in which it was necessary to place them will somewhat interfere with their usefulness. The need of more room, and of room adapted to the requirements of the department, is becoming daily more urgent. In two or three years we shall have about seventy-five men in the electrical laboratory; and when it is remembered that probably no kind of college work requires so much room for its successful execution as that of the electrical department, the imperative and immediate need of a building for this work becomes evident.

The Instructor in Natural History taught one regular student and four engineers six hours a week the last half year. The students observed for themselves, under the direction of the instructor in the laboratory, the more important physical properties of common minerals, and the behavior of minerals when heated in open and closed tubes, in the platinum forceps on charcoal and before the blow-pipe. The action of a few simple reagents upon minerals was also studied. After this systematic examination the student found the name of his mineral by the aid of Brushe's

Determination Tables. Dana's Mineralogy was used as a book of reference and classification. The last five weeks of the year were devoted to the quantitative blow-pipe analysis of easy gold, silver, and copper ores.

In the department of Modern Languages, the class taking German I. of the catalogue consisted of three seniors, two juniors, and five freshmen. These recited three hours a week for the first half year, and four hours a week for the second. The texts used were as follows: Lessing's *Minna von Barnhelm*, Goethe's *Egmont*, and Schiller's *Maria Stuart*. *Die Piccolomini* was begun, and during the last half year one exercise a week was devoted to written translation into German. The class in German II. was made up of five juniors, one sophomore, two specials, and two theological students. Six hours a week were given to the work for the first half year, and three hours a week for the second. The following texts were used: Joynes-Meissner's *Grammar*; Bernhardt, *Im Zwielficht*, II.; Freytag, *Aus dem Staat Friedrichs des Grossen*. Schiller's *Wilhelm Tell* was begun in the second half year, and several selections from Buchheim's collection of *Balladen und Romanzen* were read.

Two seniors and one junior constituted the class in French I., meeting the professor three times a week throughout the year. The texts followed were: Crane's *Société Française au XVII^e Siècle*; Molière, *Les Précieuses Ridicules*, *Tartufe*, *Le Bourgeois Gentilhomme*; and Demogeot, *Histoire de la Littérature Française au XVII^e Siècle*. Exercise was had also in the written translation of German into French. Three juniors, three sophomores, four freshmen, and one special took French II. three hours a week the first half year, and four hours a week the second half year. This course embraced

the following subjects : Corneille, Cinna, Horace, Polyeucte ; Racine, Andromaque, Phèdre, Mithridate ; Molière, L'Avare, Les Femmes Savantes, Le Misanthrope. Exercise in composition was given once a week for a half year. There was also a class of beginners in French, consisting of thirteen sophomores and nine first-year engineers. This class received instruction in Edgren's Grammar, and read about one hundred and seventy-five pages of Super's Readings from French History. In addition to the foregoing, three seniors elected Italian three hours a week for the entire year. Grandgent's Grammar was used. The following texts were read : Pellico, Le Mie Prigioni, thirty chapters ; De Amicis, Spagna ; Maffei, Merope ; Dante, The Inferno, begun.

The report of work in the department of English and Psychology notes especially the transfer of English Literature to another department. While the change must result in great benefit to the College, the loss of these classes to the professor — who had held them for twenty-seven years, and towards the last given them fully half his time — made him feel almost a stranger in his work. The required work in rhetoric and composition, psychology and logic, went on as heretofore, — rhetoric and composition the first term with sophomores and second engineers, and composition with freshmen the second term, also with juniors the second term, and with seniors both terms ; psychology with juniors the second term ; logic with seniors the first term. The transfer of English literature to the professor of English and oratory gave increased opportunity for elective work in the remaining subjects of the department. A beginning was made in this direction last year, with classes numbering from one to four, seniors except in one instance, in history of philosophy, advanced logic, English history, and daily exercises in extemporaneous composition. The

development of this elective work with Professor Shipman, under the new conditions, will be a substitute for the English Literature of former years.

In English Literature, with Professor Maulsby, seven seniors and one special student elected, during the first term, the study of authors representing the second half of the nineteenth century ; while ten men — six juniors, three sophomores, one special student — followed the course of the so-called classical period. For the second term Chaucer and Shakespeare were read by ten sophomores, one junior, and one special student ; and in the case of a part of the literature considered, a somewhat minute examination of the text was made. Representative poets of the early part of this century were studied by six juniors, three sophomores, and one special student ; each member of this class being required also to present a written account of an assigned contemporary prose-writer. In all these classes some original essay-work was done.

The study of a special topic — in this instance the history of the English drama — was pursued by four seniors, one sophomore, and one special student. Twenty-two specimen plays were made the subjects of analysis and criticism by the class. In addition, the members of the class gave individual attention to other assigned dramas, and the professor covered certain periods with lectures. The class in the History of the English Language consisted of eight freshmen of the philosophical course, and used Earle's treatise as the basis of recitation and discussion.

In Oratory, the freshmen and the sophomores each met one hour a week through the year. The elective class, for declamation and debate, comprised ten students during the first term, twelve during the second. Three classes in elocution were composed of theological students, a

beginners' class of eight members, an advanced class numbering nineteen, and during the first term a special class of four for individual work. Besides the annual competitive readings in June, three public recitals were given during the year.

With Mr. Sewall, work in English Composition was pursued throughout the entire year. The class, which numbered twenty-seven in the first half year, and twenty-four in the second half year, was divided in halves, each division coming in twice on alternate weeks, — this being the equivalent of the one hour a week that the catalogue called for. The first of these two hours was devoted entirely to writing, either extemporaneously or upon assigned topics, and the second to the reading of the best essays by the men themselves, followed by criticism by the instructor, and often also by a general discussion of the topic under consideration. The men not only acquired an added proficiency in writing, but by reading their own compositions gained a confidence in themselves that manifested itself later on in general discussions.

In French, also with Mr. Sewall, during the second half year the work was necessarily much the same as last year. The class numbered fourteen at the start; but two dropped out immediately, and two more in the first part of May, leaving ten, who took the final examination. A great deal of instruction was given orally when it was most needed; and thus, with much good material in the class, a considerable amount of work was done. The class read one hundred and ten pages in Super's Reader, meeting four hours a week; this is some ten pages more than the class did last year, meeting six hours a week.

As in previous years, everything connected with Physical Education has been optional. The work of physical exami-

nation began November 1st at the Goddard Gymnasium. One hundred men — the largest number in a single year since the opening of the Gymnasium — presented themselves for examination. These examinations were, in the main, conducted according to the plan recommended by the American Association for the Advancement of Physical Education. Special pains were taken to find out the working condition of the heart and lungs. The different parts of the body were measured, strength-tests were applied, bodily defects noted, personal habits investigated, and information was obtained about the student's parents and grandparents to explain defects in the student which might have been inherited. The results obtained at these examinations have been carefully preserved in appropriate books, with the expectation that important deductions concerning the physical condition of our men will be made as soon as a sufficient number of examinations have been completed. A copy of his own measurements and strength tests has been furnished each student. By comparing his measurements and a record of his strength with a mean obtained by Dr. Hitchcock from the examination of two thousand Amherst students he will be able to find out his relation in size and strength to the typical Amherst student.

Ninety men began active work at the Gymnasium about the middle of November. Each man was furnished with a card of directions for exercises intended to correct such personal defects as were discovered at the physical examination. These special exercises were performed by the men individually under the supervision of the instructor. For general exercise the men were divided into two classes, according to their physical strength and known capacity for gymnastic work, and each division met the instructor four times a week. Free movements were given the division

containing the weaker men. Then they worked with wands, and later did simple exercises upon the vaulting-bar, vaulting-horse, parallel-bars, and suspended parallel-bars. For this work on the fixed apparatus the class was divided into two squads, with a class-leader in charge of one, while the instructor led the other. The apparatus used by the division containing the stronger men was similar to that used by the other division. Their exercises, however, were longer, and their movements more difficult and varied. As the mid-year examinations approached there was a considerable decrease in the attendance of the students at gymnastic exercises. For this reason, and because the base-ball season was approaching, it seemed advisable to reorganize the classes. Accordingly, about the middle of February twenty candidates for the fall team were placed in one class, and given such training as the Gymnasium affords to fit them for work on the ball-field. Those not candidates for the nine continued to exercise together up to the middle of March, when indoor gave place to out-door exercise.

The increased attendance on exercises at the Gymnasium during the past year has been in no small degree a source of encouragement to the instructor, but it has not been so large or so regular as could be desired. The instructor has been led to think that better results in physical education would be obtained by requiring it as a part of the college course, or by making it a regular elective. During the past year another much-needed dressing-room, with lockers, has been added. More apparatus and some repairs will be needed for the coming year.

The seniors met the President for instruction in Ethics four hours a week during the first half year. Calderwood's Handbook of Ethics was used as a text-book. Much time

was spent in the consideration of ethical theories, and attention given to the history of ethics. The students were thrown upon their own resources, and the results of their investigation were presented in writing. Ample opportunity was afforded in the class-room both for the discrimination, by the students themselves, between intuitionism and utilitarianism, and for the discussion of the grounds and bearings of each of these systems. Ten seniors during the same half year took the elective in Ancient Law. Maine was used as the basis; but the work was done largely through lectures and discussions, the effort being to enable the student, from the standpoint of history, to have a clear view, not only of the genesis of jural conceptions, but of the institutions that form the ground-work of modern civilized society.

In the second half year Political Economy was taken up as a required subject for seniors four times a week. Marshall's text-book was again used, though with results not so satisfactory as in the previous year. The abstruse treatment of the subject by this author seemed to chill, in some measure, the interest. A number of questions, however, not covered by the text-book were investigated with interest and profit, and so much enthusiasm was awakened that many of the topics of the graduation theses were drawn from political economy. Ten seniors and one graduate student pursued, in continuation of the elective work of the first half year, the subject of International Law three times a week. George B. Davis's work was studied, but independent consideration was given to the more important diplomatic episodes of modern times. There was also a dispassionate discussion of existing international questions. The fact that important negotiations were in progress between the United States and other countries, besides giving

in a practical form, through the columns of the daily press, the materials for fruitful study, afforded a powerful intellectual stimulus.

The accessions to the Library for the year were eight hundred and eighty-six volumes and six hundred and eighty-nine pamphlets, and twenty-eight hundred and sixty-three numbers of periodicals; but as three hundred and nine were returned to the Department of the Interior and given in exchange, the net gain is five hundred and eighty-seven volumes, making the total number of volumes in the Library twenty-eight thousand and seventy-two.

The accessions were: by purchase, three hundred and seventy-seven volumes, and eight hundred and thirty-seven numbers of periodicals; by donation, three hundred and twenty-seven volumes, six hundred and eighty-eight pamphlets, eighteen hundred and fifty-three numbers; by binding, one hundred and fifty-one volumes; and by exchange, thirty-one volumes, one pamphlet, one hundred and seventy-three numbers. Of the volumes purchased, three hundred and sixty were bought with the income of the Joy Fund, and seventeen with the income of the Vannevar Fund. The Joy Fund purchases were mostly for the department of English Literature, and of several authors four or five copies were purchased, to be used for class-work by the students.

An arrangement was made with the Boston Book Company for an exchange of duplicate numbers to complete some of our periodicals. In this way we have been able to complete our sets of Scribner's, the Century, the Popular Science Monthly, and the North American Review, with the exception of two numbers of the last magazine. There was also received through the Company the indexes of Harper's Monthly, of the Century, of the North American Review, and of the *Revue des Deux Mondes*. The duplicates

exchanged were mostly of periodicals and State documents. The Library was benefited by the gain of the room these had taken up in the basement. The exchanges numbered two hundred and seventy-one volumes and about eight hundred and fifty single numbers. To the Department of the Interior were returned thirty-eight volumes, and from that Department we are constantly receiving volumes to fill our needs.

It will not be out of place to mention here several of the more important things accomplished in the Library by Mr. Sewall, who was assistant librarian. The addition of some two hundred and fifty volumes early in the year necessitated considerable change for their accommodation. Advantage was taken of this opportunity to continue the work of rearrangement, and scattered books and classes of books were brought together, and the volumes of seventeen departments were arranged in alphabetical order according to authors. This work involved the handling of four thousand or five thousand books, often not once only, but many times, before the proper place of each was found. In the second half year a careful enumeration of the college catalogues was made, and measures were taken to complete the files. Forty-six colleges were written to. Twenty-six have already replied with such catalogues as they had. In the case of the government publications, a careful check-list of books in hand was compiled, and a duplicate showing the deficiencies of the Library sent to Washington. Thus there has been an application for the completion of every series that is not now full ; at the same time many files have been completed by direct correspondence, and the name of the Library has been listed for all future publications of several bureaus and departments. Many of our own duplicates have also been culled out and returned.

There has been an important change in the administration of the Library, as follows: first, in the opening of it on Wednesday and Saturday afternoons; and secondly, in beginning the distribution of books one hour earlier in the morning. Thus the number of hours for withdrawal and consultation has been increased by about twelve a week. The number of students in attendance during those extra hours fully justifies this enlargement of the facilities.

I submit herewith the Report of the Dean of the Divinity School and that of the Director of the Barnum Museum of Natural History.

E. H. CAPEN.

TUFTS COLLEGE,
September 22, 1892.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

TO THE PRESIDENT:

THE whole number of students in the Divinity School for the college year 1891-92 was thirty-eight. Two of these took graduate studies, and one entered as a special student. Including the graduate students and the special, thirteen entered the School in September, at the beginning of the year, four as juniors, and eight as sub-juniors, representing eleven States; namely, Massachusetts, Maine, Connecticut, Vermont, New Hampshire, New York, Ohio, Pennsylvania, Michigan, Kansas, and South Dakota.

The following gentlemen were graduated in June: Anthony Bilkovsky, Harry Blackford, Ralph E. Conner, William B. Eddy, Frederick W. Evans, Herbert O. Maxham, Herbert F. Moulton, John A. Sayles, Lester E. Williams.

The work in the various departments of instruction shows advance over any previous year, both as regards the number of subjects taught and the character of the results reached. From year to year more and more has been done towards the specialization of subjects, so that to-day the School represents the distinct departments in the various branches of theology. In what may be called the

theological scheme of the School, place is found for philosophy, — mental, ethical religious, — comparative religion, Biblical theology, ecclesiastical history, systematic theology, and all the subjects which relate to the administration of religion, such as ecclesiastical organization, ecclesiastical law, preaching, and pastoral care.

During the year six teachers, including the Professor of Oratory, have been actively engaged in the work of the department, carrying out the aim of the School to equip men for the active work of the Christian ministry. All our forces have been directed to this one end, — to turn ability, scholarship, and religious devotion to the account of a practical ministry in the churches. The methods of the School also have been determined by this one object, and have been such, therefore, as keep in view the actual relations of the students to life and to the work for which they are preparing. The whole motive of the School means the application of the best attainments in the most exact study, to the practical problems of individual and associative life. This implies, as it is right to say, that the teaching is broad in its sympathies, and unhampered by any fear of the most rigorous scientific method. Indeed, a large part of the work in the various departments is done by references, — a method which leads the student to consult many differing authors, to look at subjects and questions on all sides, and to foster and maintain the judicial temper. Hence the very genius and spirit of the School encourage discussion rather than advocacy.

1. In the formal disposition of the studies, philosophy holds a place, not only in the category of preparatory discipline, but as a part of the theologian's indispensable equipment. Therefore the teaching deals with the conditions of belief and the sphere of knowledge; with the facts of

conscience and their various explanations; and with inquiries into the being, attributes and providence of God, and the doctrine of a future life, commending to the student the one fact that religion has a real object.

2. The teaching of the School favors a sympathetic study of the Non-Christian systems. It is not content with a purely historical task, but aims, through the facts as to origin, creed, ritual, to arrive at a fuller comprehension of those things which belong to our common nature, both with respect to what is strong and what is weak.

3. Biblical theology follows the study of the religions of nature. The teaching recognizes the Bible as the source from which religious knowledge must be drawn, and that every part of the theological course is concerned with some branch of Biblical study. While, in practice, the School concedes that the New Testament most nearly concerns us as Christians, as bringing us in closer contact with the foundations of our religion, it is yet in sympathy with the awakened thought of the time in regard to the study of the Old Testament, — the language in which it was originally written, the criticism of its text, the origin and the collection of its writings, and the study of its events, its conditions of life and character with reference to modern equivalents, and to questions of immediate import.

4. This Report does not aim to place the subjects in actual order; for, in practice, departments frequently blend with one another. Much of the work of this School which is taken up under the head of Ecclesiastical History, for instance, might easily be relegated to some other department. In the scheme as a whole, however, as it lies in the thought of the teachers, the correlation of parts is distinct. Ecclesiastical History, therefore, is assigned its due place, — the study which constantly keeps in view the wider scope of his-

tory, and describes the Christian religion in the fulness of its activity, as including not only what presents itself to the eye within a particular sphere, but also that religious life which lies outside the ecclesiastical boundary. The history of the Church is thus regarded as the expression of the Christian spirit, whether in the form of organization, of worship, of belief, of literature, of art, or of character.

5. The study of Systematic Theology, as pursued in this School, easily connects itself with historic inquiries into the various religions of the world, and progress in the Christian Church. All previous study, as indicated in this Report, leads to a study at once critical and constructive. So far, too, as this Report may define or represent, the task which Systematic Theology favors is to present religious truth in a properly arranged and harmonious system, rationally established as a whole and in its parts. The aim is to co-ordinate the products of Biblical theology, religious history, natural theology, ethics, and, indeed, all the sources of theological material.

6. The subjects which belong to the later part of the Divinity course are classed under the head of practical theology. Here belong the principles of ecclesiastical association and ecclesiastical law, the agencies for the expression and cultivation of religion outside the Church, and the action of the Church outside the sphere of religion. Every department of the School is sensitive to the great economic questions which are pressed upon the thought of our time and nation, the aim being to apply the principles of ethics to the solution of social problems, and so to illustrate the lofty disinterestedness of Christianity that men will see in it the true remedy for all forms of oppression. The School also commends to its students certain forms of benevolent work among the actual poor, and the practical endeavor to bring

under the influences of religious fellowship those who are outside of all the churches.

The work of the year has been greatly aided by the lectures of the Rev. Henry I. Cushman, D.D., and the Rev. Arthur G. Rogers.

This Report would be incomplete without some grateful reference to the new buildings which are set apart for the exclusive use of the Divinity School. We owe a great deal to the wise and generous thought of those who have made it possible for the School to cultivate a distinct life and to do ampler work. Miner Theological Hall provides facilities for the daily work of this department, as well as for chapel and library accommodations, and is, in all respects, admirably suited to the uses of the School. The added munificence of Dr. Miner in furnishing the class-rooms, the chapel, and a proper reception-room, where the students can meet their friends, and where visiting clergy and others who are interested in the College can have refined and restful welcome, claims at this time our special gratitude.

The companion building to Miner Hall, the dormitory for the students, is the gift to the School of its numerous friends. The money for this noble building, which has been fitly named Paige Hall, in honor of the Rev. Lucius R. Paige, D.D., was as freely as it was generously given. Indeed, the suggestion amply to furnish the thirty-six rooms of this Hall came from those who had already done so much to build it. All the rooms are now the living and working rooms of thirty-six students.

It may seem too early to speak of our needs, but it is evident that another dormitory will be required at a very early day. If as many students enter the School in the autumn of 1893 as have arranged to enter the coming year

of 1892, we shall have fifteen men for whom no rooms are provided. We trust, too, that it will be a welcome hint to some friend of the College, who is eager in the interest of an educated ministry, that a chapel for the distinct use of the School will be at no distant day a desideratum.

Respectfully submitted,

CHARLES H. LEONARD, *Dean*.

TUFTS COLLEGE,
September 22, 1892.

THE BARNUM MUSEUM.

THE BARNUM MUSEUM OF NATURAL HISTORY.

TO THE PRESIDENT:

COURSES of instruction were given, as usual, in Botany, Zoology, Biology, Physiology, Mineralogy, and Geology.

The course in Mineralogy was conducted by Mr. Durkee, with marked ability.

The following valuable donations have been received at the Museum during the year:—

1. The mounted skeleton of a Bengal tiger.
2. The mounted skeleton of an eland.
3. The mounted skeleton of a polar bear.
4. The mounted skeleton of an elk.
5. The mounted skeleton of a puma.
6. A very valuable collection of fossils and minerals, the gift of James L. Lockwood, who collected them during his travels in California. It comprises one hundred and forty species, and one hundred and eighty-one specimens of fossil shells and cetacean vertebræ, and forty-two excellent ores of gold, silver, copper, and mercury.
7. From Isaac Curtis Mann, of the class of 1874, a very interesting suite of sections of large stalactites, illustrating their structure.
8. Miss Bella Waite, of West Medford, has given two finely mounted specimens of garfish from Florida.

9. From Mr. William A. Small, a suite of specimens of asbestos, together with specimens of the mica schist formation in which the asbestos occurs.

10. From Mrs. James L. Schumacher, of Jacksonville, Fla., a collection of excellent shells, two hundred and fifty-two in number.

11. A good collection of specimens of graphite from Ticonderoga, N. Y., and Ceylon, by Andrew J. Clement, of Philadelphia.

Respectfully submitted,

JOHN P. MARSHALL.

TUFTS COLLEGE,

September 22, 1892.

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ANNUAL REPORT

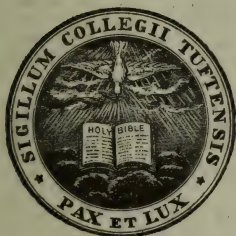
OF THE

PRESIDENT

OF

TUFTS COLLEGE

1892-93

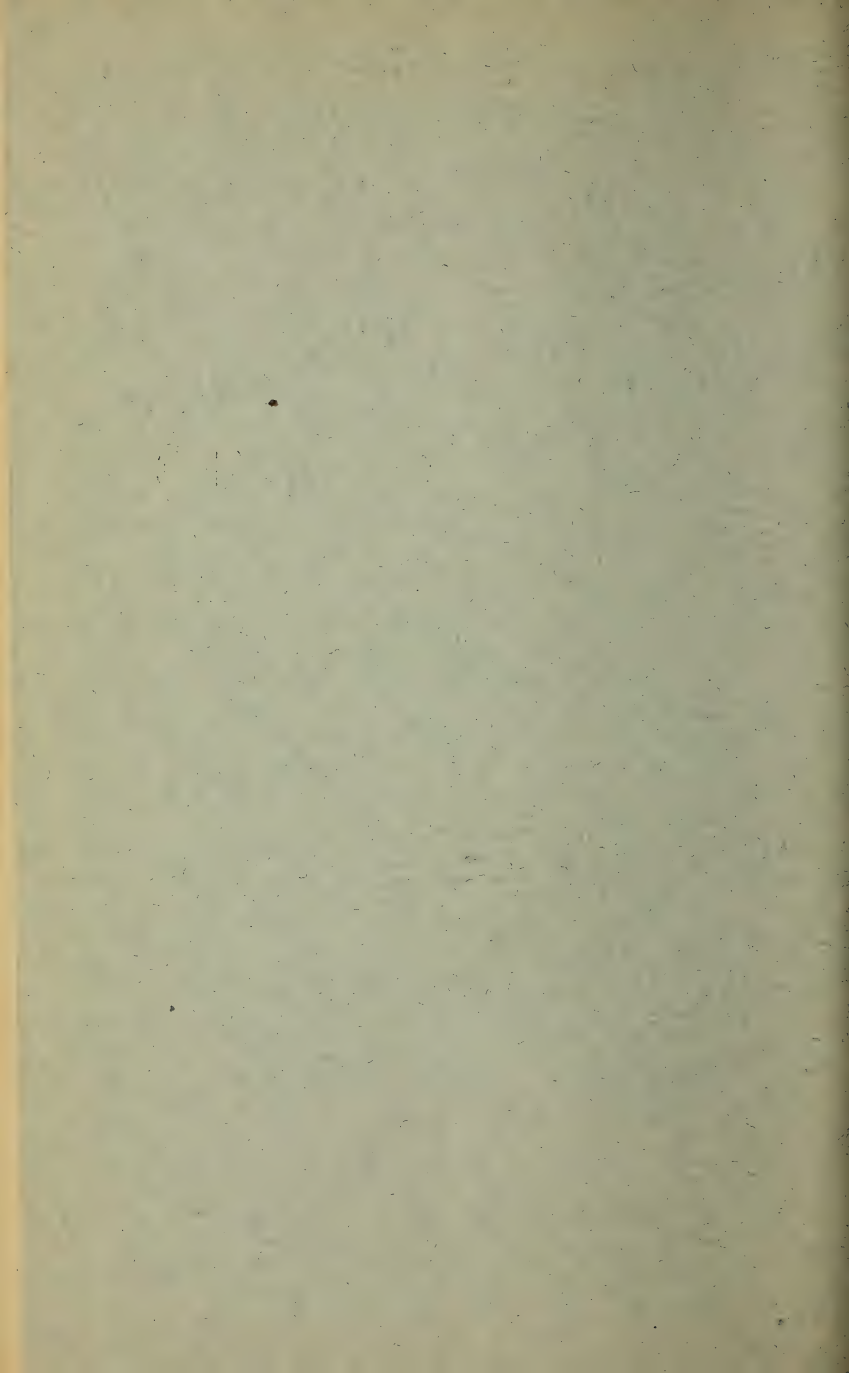


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1894

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ANNUAL REPORT

OF THE

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1892-93



BOSTON

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1894

PRESIDENT'S REPORT.

To the Honorable and Reverend the Trustees of Tufts College :

GENTLEMEN: The President of the College has the honor to submit the following Report for the academic year 1892-3; namely, from September 22, 1892, to September 21, 1893.

The Corporation has sustained a serious loss in the death of Charles Greenwood Pope, who had held the office of Trustee since 1873, and who was the second alumnus to be chosen a member of this body. He was a graduate of the class of 1861. For some years after leaving college he taught school with eminent success, but subsequently took up the practice of law. Both by his practical experience in teaching and his learning and ability as a lawyer, he was able to render, and did render in many ways, valuable service to the College. He had the affectionate interest of a loyal son in his Alma Mater. Whatever of time or effort was demanded of him in her behalf was given ungrudgingly and cheerfully. Her loss is all the more apparent from the fact that he was cut down in the prime of his manhood, when time had only ripened his faculties and increased his wisdom.

Appointments have been made as follows:

ALBERT NOTT, M.D.,

Professor of Physiology and Hygiene, and Dean of the Medical School.

CHARLES P. THAYER, M.D.,

Professor of General, Descriptive, and Surgical Anatomy.

HENRY W. DUDLEY, M.D.,

Professor of Pathology.

WILLIAM R. CHIPMAN, A.B., M.D.,

Professor of Principles and Practice of Surgery and Operative Surgery.

WALTER L. HALL, M.D.,

Professor of Principles and Practice of Medicine and Clinical Medicine.

JOHN W. JOHNSON, M.D.,

Professor of Obstetrics and Gynæcology.

FRANK G. WHEATLEY, M.D.,

Professor of Materia Medica and Therapeutics.

ARTHUR E. AUSTIN, A.B., M.D., *Lecturer on Medical Chemistry.*

CHARLES A. PITKIN, PH.D., *Lecturer on General Chemistry.*

JOHN A. TENNEY, M.D., *Lecturer on Ophthalmology and Otology.*

SAMUEL G. WEBBER, M.D., *Lecturer on Nervous Diseases.*

WILLIAM F. HUTCHINSON, M.D., *Lecturer on Electro-Therapeutics.*

THOMAS M. DURELL, M.D., *Lecturer on Medical Jurisprudence.*

J. CUSHING GALLISON, M.D., *Lecturer on Genito-Urinary Surgery.*

CHARLES D. KNOWLTON, M.D., *Demonstrator of Anatomy.*

FRED S. RADDIN, A.B., M.D., *Instructor in Surgery.*

WILLIAM A. WHITE, M.D., *Instructor in Theory and Practice.*

RICHARD A. PIERCE, *Demonstrator of Physiology.*

EDWARD E. THORPE, M.D., *Instructor in Medical Chemistry.*

CHARLES L. CUTLER, M.D., *Instructor in Gynæcology.*

HORATIO MYRICK, A.M.B., *Instructor in Electricity.*

The following reappointments have been made for the year :

ANSON B. CURTIS, PH.D., *Instructor in Hebrew.*

FRANK W. DURKEE, A.M., *Instructor in Chemistry and Physical Culture.*

LEO R. LEWIS, A.M., *Instructor in French.*

FRANK T. DANIELS, A.M.B., *Instructor in Civil Engineering.*

Arthur M. Comey, Ph.D., resigned the Professorship of Chemistry, July 1, 1893, to take effect October 1. The resignation was accepted. Frank W. Durkee, A.M., will have charge, temporarily, of the work of the department. It is expected that arrangements will be made with Arthur Michael, Ph.D., to assume the chair of Chemistry.

The number of students admitted to the College in all departments is eighty-three. They are distributed as follows:

Graduates	7
Senior	1
Sophomore	1
Freshmen (Classical)	32
Freshmen (Engineering)	25
Special Students	2
Divinity School	15
	—
Total	83

The number of degrees given in course at the last Commencement was twenty-seven, as follows:

Bachelor of Arts	7
Bachelor of Philosophy	1
Bachelor of Mechanic Arts	13
Master of Arts	3
Bachelor of Divinity	3
	—
Total	27

The number of students enrolled in the College is two hundred and four, of whom one hundred and sixty are in the College of Letters and forty-four in the Divinity School. The enrolment for next year will be considerably in excess of this number. Leaving out the departments that have been added during the year, there will be nearly three hundred to be cared for next year. This

rapid increase of numbers will press severely upon our accommodations. Steps have been taken looking towards an enlargement of dormitory facilities which will afford a measure of relief.

The old dormitory known as East Hall has had its interior entirely rebuilt, adding a number of suites to those formerly in use. The portion that has hitherto served as a commons dining-room will soon be vacated. It will then be cut up and devoted to students' rooms.

In the early spring Mr. Albert Metcalf, of West Newton, tendered to the Trustees the gift of a building to be used as a home for women students. The tender was gratefully accepted. Work was begun at once upon the building, and it is expected that it will be completed and ready for use by the beginning of the college year 1894-95. This building will afford lodging for at least thirty young women.

The Corporation has decided, also, to erect a composite structure on Boston avenue, near the present railroad station. One portion of this building will be used as a post-office, one portion as a store, and still another part as a dining-hall. Above the post-office and store there will be suites of rooms for about twenty students.

Notwithstanding these enlargements, in view of the steady and rapid expansion which the College is undergoing, a new dormitory, of ample size, will be needed by the beginning of the year 1894-95. If some friend of the College would furnish the means for the erection of such a building the gift would be most welcome.

The pressure, however, upon our dormitory facilities is not greater than upon our laboratories and recitation-rooms. The increase in the teaching force of the College, as well as the increase of students, has multiplied classes, and has put upon us the necessity of providing rooms for the new work. The Trustees have not been unmindful of

the situation. The large room in Ballou Hall, long used for public exercises, has been subdivided by partitions, and four rooms of good size have been obtained by the change. The relief afforded, however, is but slight. Our requirements can only be met either by the erection of a new recitation-hall of ample size and the conversion of Ballou Hall into a scientific building, or by a new building devoted wholly to science, and the removal of the chemical and physical laboratories from their present quarters in Ballou Hall.

The Rev. Dr. Miner, trustee under the will of the late Henry B. Pearson, has begun the erection and equipment of a building for the use of the Bromfield-Pearson High School. Gardner C. Anthony, A.M., has been appointed Dean of the school, and work will begin with the opening of the College year. The work contemplated is both technical and secondary. Students pursuing the engineering courses will take their drawing and shop work in this school, while those who are in the preparatory stages will receive the instruction needed to fit them for the department of engineering. It is believed that this school will be successful from the start, and that it will fill an important place in our educational scheme. In a few weeks the entire outfit, including the building, apparatus, and funds, will be turned over to the College for administration.

The College has still further enlarged its scope by the establishment of a Medical School. Early in the summer the Trustees were appealed to by a body of reputable physicians, who had had long and successful experience in teaching, to recognize them as a Medical Faculty and permit them, under their direction, to give a medical education. After a very careful investigation, taking the opinion of medical experts interested in the welfare of the College, the Trustees came to the conclusion that there

was ample room in Boston for such a school as was proposed ; namely, a school of the regular order, for both men and women, in which instruction should be thorough and the charges moderate. Favorable action, therefore, was taken on the petition, and arrangements have been made for the opening of the School, with excellent prospects of success.

In my last report I called attention to the need of a much broader privilege of admission to college, owing to the fact that the better high schools of New England had a variety of courses for the graduation of pupils, and that opportunity for a liberal education ought not to be restricted to those who had pursued only one course. A committee of the Faculty of the College of Letters has been studying this subject during the past year, and, in consequence, it is likely that the forthcoming catalogue will announce the broadening of the course leading to the degree of Ph.B., so that this result may be accomplished. The work provided will be solid and thorough, and will embrace a period of four years' duration. It will be based upon what is called the English course in the best high schools of the country.

It will be remembered also that I called attention to the need of a more elastic method of meeting the requirements for the ordinary college degree. This subject was taken up and a very important result reached by the Faculty. With the opening of the fall term the curriculum as announced in the catalogue for the present year will be superseded. The new plan has been adopted in the belief that the true ground for promotion is intellectual attainment, and that the fixed requirement of a certain number of years of study, without regard to the mental power and achievements of the individual student, does not tend to encourage the highest scholarship. It is also believed that the series of compromises between the

old prescribed course of study and the new elective system has produced a curriculum which is arbitrary in its arrangement and susceptible of great improvement in the direction of a system looking at once to the requirements of the general culture which should be a prime object of the undergraduate college course, and to the development of the individual on the lines to which he is especially adapted. The new plan, which will go into effect in the fall of 1893, is offered as a possible solution of the problems which the situation stated above presents.

A synopsis of the new requirements will not be without interest.

(1.) The requirement for the degree of Bachelor of Arts is the satisfactory completion of subjects aggregating one hundred and twenty-six term hours,¹ exclusive of the required work in physical culture.

(2.) The programme of prescribed studies is as follows:

	TERM HOURS.
LANGUAGES (Latin, Greek, French, German; each student to take <i>three</i>)	18
ENGLISH (Rhetoric, Composition, Themes, Oratory),	12
MATHEMATICS	6
SCIENCE (Physics, Chemistry, Biology; each student to take <i>one</i>)	6
MENTAL AND MORAL SCIENCES (Psychology, Logic, Ethics, History, Economics; each student to take <i>one full or two half</i> subjects)	6
A total of	48

The requirements are by groups, not by special subjects, and in each group, except English and Mathematics, some choice is allowed the student.

¹The unit for indicating the requirements is the *term hour* representing the number of hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week for one term represents a requirement of three term hours; if it calls for three hours a week for one year, the requirement in that subject is six term hours.

The programme of the student in the Freshman year will be made up from the prescribed groups, but the prescribed work in the group of Mental and Moral Sciences cannot be taken before the Sophomore year except by special permission of the Faculty.

(3.) At the end of his first year the student shall choose his major subject, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer the work already done in some one of the prescribed groups as a part of the eighteen hours which he is required to give to his major subject.

(4.) Acting under the advice of his instructor in his major subject, the student shall make up a program of eighteen term hours in collateral subjects, that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5.) The remaining forty-two term hours of the required aggregate shall be made up by the free election of the student from the various subjects offered, limited only by such special restrictions as may be applied to the taking of certain subjects.

(6.) Upon the satisfactory completion of the aggregate requirement, the student shall be entitled to receive the Bachelor's degree ; but no student shall be granted a degree in less than four years of residence, unless he shall have attained Grade B as an average for his entire work.

SUMMARY.

Prescribed work (physical culture, 2 hours),	50	term	hours.
Major subject	18	"	"
Collateral subjects	18	"	"
Free electives	42	"	"
	128	"	"

It will be seen that this plan is at once liberal, controlled, and elastic. Throughout his course the student will have large liberty in choosing his work, but a considerable portion of that work will be arranged for him and directed by men who can judge of his requirements better than he can himself. A reasonable amount of guided specialization is provided for, and each student will be brought into personal relations with his major instructor in a way that can hardly fail to produce good results in his college work. All work actually accomplished by the student will count toward the attainment of the mark of the scholar, the degree. The period within which that may be attained will now depend upon the industry and ability of the individual student.

I call attention to the work done in the different departments of instruction.

The work in the Latin department differed but little from that of former years. The Freshmen, an excellent class, read the twenty-first book of Livy, Cicero's Cato Major, and three books of the Odes of Horace, reciting three times a week. They also recited twice a week in Roman History and Antiquities, using as text-books Liddell's History of Rome, Rawlinson's Manual of Ancient History, and Ramsey's Elementary Manual of Roman Antiquities. Essays on subjects related to their work were prepared by the students and read before the class, and several lectures on the origin and development of the Latin language were given by the professor. The Sophomores, during the first half-year, read Cicero's Lælius, and two books of the Odes of Horace, reciting twice a week. During the second half-year four members of the class elected Latin as an extra study, and read the Adelphi of Terence, reciting once a week. One Junior elected Latin through the year, reading selections from the Satires of Juvenal and from Pliny's Letters, the greater part of

Catullus, and two books of Lucretius. He also did considerable extra work in Greek and Roman archæology, using as a text-book Guhl and Koner's *Life of the Greeks and Romans*, reciting once a week through the year.

During the year three Juniors elected Greek with Dr. Schneider, the first term, and two the second term. They recited three times a week throughout the year. During the second term, however, at the request of the class, a fourth hour was added for special sight-reading. The text-books for the first half-year were: Theocritus's *Idyls*, Plato's *Symposium*, and for sight-reading Tyler's *Greek Lyrics*. After reading the *Symposium* several lectures were given to the class with reference to the subject-matter of the dialogue, as well as to the character of the several speakers, and the relation of the several orations to each other. For the second term the text-books were: Pindar's *Odes*, Euripides's *Medora*, and Demosthenes's *Philippics*; for sight-reading, the *Panegyricus* of Socrates and Lucian's *Dialogues* furnished the text.

Courses of instruction, aggregating seventeen hours a week, were given by Dr. Graves. Five hours a week were devoted to the class for beginners, four to the work required of Freshmen, two to elective classes for Freshmen, three to the regular course for Sophomores, one hour to Sophomore sight-reading, and two hours to the seminar.

The institution of elementary Greek in the College, despite the inconvenient hours and other obstacles with which the new course was obliged to meet, proved a signal success. One month before the second term was out, the eight men into which the class had resolved itself all passed the regular examination for entrance with comparative ease. The essentials of Greek grammar, White's *Reader*, four books of the *Anabasis*, three books of the *Iliad*, and Jones's *Greek Composition* were carefully studied and reviewed.

The Freshmen in the regular class were drilled first in Attic Greek with Xenophon's *Memorabilia* as the basis. The divergencies in the various dialects were then pointed out by lectures, and illustrated to some extent by the reading of Homer and Herodotus. Owing to the good grammatical foundation of most of the class, much time was given to the literary merit of the works read. The sixth book of Herodotus, the Phæacian Episode of Homer's *Odyssey*, and the *Antigone* of Sophocles were selected especially for this purpose. In connection with the reading of Sophocles, lectures were given on the Greek drama and theatre. Exercises in prose composition were held once a week throughout both terms. The extra work for Freshmen was divided into two sections, one being devoted to the topical study of Greek history and the other to reading at sight in the later books of the *Iliad*. Much enthusiasm was shown in all the Freshman courses, and a good foundation for successful work was laid.

The Sophomore class presented a more difficult problem. Several men were so poorly prepared and so indifferent to the study of Greek that the rest of the class could not but feel the effect. In the second term, when Greek became elective, the work was more satisfactory. The usual course in orators and dramatists was undertaken and lectures were re given to fill out the deficiency in reading. The orations of Lysias as edited by Dr. Whiton and the *Œdipus Tyrannus* of Sophocles were read during the first term. A special division also translated at sight the *Alcestis* of Euripides. The work of the second term consisted of the *Clouds* of Aristophanes, the *De Corona* of Demosthens, the *Trachiniæ* of Sophocles, and Plato's *Crito*. The two last were read at sight. The seminar class was arranged for the study of the literary and textual criticism of Sophocles with special reference to the *Philoctetes*, an edition of which has since been published by the instructor.

The work in the department of Mathematics was about the same as for the year previous. The Freshmen and Sophomores were divided about evenly by assigning all the engineer students of each to one division to be taught by Mr. Sanborn, and the students of the College of Letters to another division to be taught by the Professor. It was supposed that the change of the time for beginning the study of the Calculus to the middle of the Sophomore year, when the required mathematical work ceases, might induce some of the students to elect in that branch, as by so doing they would suffer no break in the continuity of their mathematical studies. This has been verified. Two men from each of the upper classes elected it the middle of their Sophomore year. Two Seniors have applied for honors in this department, and during the past year took two hours extra throughout the year, in addition to the three hours elective work.

The Freshmen were taught four hours a week throughout the year, the Sophomores four hours a week until mid-year, the Senior Engineers three hours a week for the year, the Junior Engineers three hours a week during the second term, and the Junior electives two hours a week throughout the year, their regular elective being taken with the Senior Engineers.

The following is a synopsis of the work of the Walker Special Instructor:

For the first term the second year Engineers in Analytic Geometry. Freshman Engineers in Algebra for the term, and in Spherical Geometry and Plane Trigonometry one-half term each.

The third year Electrical Engineers in mechanical drawing, which consisted of working detail and assembly drawings of a Crosby safety valve from the students' own sketches and measurements of the same.

The second year Electrical Engineers in mechanical

drawing. This was similar to that just mentioned, except that a simpler valve was used.

The Freshmen Engineers in freehand drawing. This consisted of freehand lettering and the making of working sketches from object.

For the second term the Freshmen Engineers in spherical trigonometry and in physical arithmetic each for half the term.

The third and second year Electrical Engineers in mechanical drawing. The work of both was somewhat similar, each class taking up isometric working assembly drawings and the drawing of templates for the construction of gear-teeth.

In the department of Civil Engineering, at the beginning of the year, all Senior Engineers began the study of applied mechanics. Free use is made of the higher mathematics, and students soon appreciate the benefit derived from mathematical training. Numerous tests were made of the materials used in engineering construction.

The Senior Civil Engineers at the same time took up the study of foundations and masonry construction, work in the lecture-room being supplemented by frequent inspection of work under construction. Notes and sketches were taken of the methods and appliances used in the construction of bridge masonry on land and under water, pile-driving, coffer dams, timbering for trenches, and the construction of sewers. A written report was required of each student, describing the character of the work and progress made, and giving the number of men employed. The class at this time also pursued a course of road engineering, the greater part of the time being devoted to railroads. The usual operations were carried out of making the preliminary survey, mapping the line and topography, projecting a paper location, and running in said

location in the field. The setting of slope stakes and making estimates followed. Considerable extra work was done by the class, under Mr. Daniels, in surveying for new streets, laying out house lots, taking levels, and giving points for new buildings.

In the second term the study of hydraulics began, dividing the time with roofs and bridges. A great number of examples were solved both analytically and graphically. The amount of work was about the same as that of the preceding year. The Juniors pursued the study of the steam-engine during the second term. A text-book was used, but accompanied by frequent lectures. A trial test of a four-cylinder compound engine was made by the Seniors. One graduate student has been directed in his work.

Under Mr. Daniels the Freshman class of engineers pursued mechanical drawing six hours a week through the year. Twenty-two men completed the work. There were made thirty-two plates, which included geometric problems, projections, and intersections, tracing and blue-printing, isometric, architectural, and machine drawing, freehand lettering and flat tinting. No fewer than eight of these students did extra work, mostly in machine drawing. A complete set of plates, showing the average work, was retained as the property of the College. Twenty members of this class took descriptive geometry during the second term, four times a week. The time given to this subject was thus two-thirds as much as has heretofore been given, but very nearly the usual amount of ground was covered. Besides the usual blackboard and pencil work, four sheets of practical problems, accurately constructed, were made. The spirit manifested by this class was very gratifying. There was also a special class in descriptive geometry for six Sophomore engineers who repeated the subject. These met twice a week during the second term.

The construction of buildings and streets upon the College grounds gave them and the Seniors valuable practice in actual field work. This included transit work on line, level work on street grades and "batter boards," and topography with transit and level or transit and stadia.

Besides field work the Civil Engineers did work in the drawing-room in plotting and computations from notes, street plan and profile from notes, machine drawing, free-hand lettering, tinting, shades and shadows in colors, and use of planimeter. Four men did this work twelve hours a week for the year. The Senior Civil Engineers, of whom there were four, also did surveying and drawing twelve hours a week for the year. In addition to field work already mentioned these men did plane-table work. The drawing-room work consisted of topography in both colors and with pen, a part of which was studied in connection with plaster cast; a plate girder railroad bridge, designed for two tracks and to sustain a given load; and drawing showing street line and grades. During the spring a topographical map of the College grounds was made for exhibition at the World's Fair. This map is about seven feet by nine in size. Assistance was rendered in its execution by the second year and Senior Civil Engineers. The department has received from the Johnson Company, of Johnstown, Pa., a large number of full-size rail sections for use in the Civil Engineering department.

In the department of Physics the Juniors had three hours a week throughout the year. There were thirty-eight members to the class. The character of the work was as usual. Recitations and lectures as fully illustrated as the resources of the department would permit. The attendance was regular. Three Seniors elected astronomy for the first term, and there was also an electric class of five Seniors attending a course of lectures on the conservation of energy, through the first term, each one coming

twice a week. A course of lectures was also given twice a week during the second term to the Senior Engineers on the industrial uses of electricity, in which the history of various electrical devices and industries was presented, as well as the scientific principles which underlie them all.

On account of the size of the classes in Electrical Engineering, and the consequent amount of room needed for their laboratory work, it has been impracticable to have elective laboratory students in physics, much to the detriment of the department. This condition will remain until a suitable building is provided, with rooms adapted for investigations in heat, light, electricity, etc. Research work cannot go on where room and apparatus are not to be had. There is a great field for the training of teachers of physics and chemistry in the common schools of the country, and it would add to the importance of the College to the community if it could enter upon this work in a professional way.

The work of the Chemical department was conducted by Professor Comey and Mr. Durkee. The Juniors had a course in inorganic chemistry four hours a week for the first term. The work consisted of recitations, lectures, and laboratory practice. Under the same instructors elective work was continued during the second term three hours a week, under the head of Qualitative Analysis, in basic analysis supplemented by lectures and laboratory work. Professor Comey also offered electives as follows: Qualitative Analysis; — acid analysis, and analysis of salts and natural products, three hours a week for the first term. Quantitative Analysis; — gravimetric and volumetric analysis, and analysis of ores, three hours a week for the year; analysis of water and food products three hours a week for the second term. Organic chemistry was also given by lectures, recitations, and laboratory work three hours

a week for the second term. In addition Mr. Durkee did a large amount of important analytical work upon the iron ore of the Messaba Range in Minnesota and upon the iron ores and coal of Nova Scotia.

In the department of Electrical Engineering the work described in the catalogue has been in general satisfactorily accomplished. During the spring an experiment was tried with the second class, the results of which were sufficiently encouraging to warrant its repetition. Once a week in place of the usual lecture or recitation a member of the class was required to prepare and deliver a paper on some important electrical subject. While, of course, some of these attempts were crude and boyish, some, on the other hand, were worthy of high commendation. The growth of the department is exhibited in the following table, which shows the whole number of students in electrical engineering for each of the last six academic years, also approximately the number for the present year, and an estimate for the academic year 1895-96 :

Year.	No. of Students.
1887-88	8
1888-89	16
1889-90	28
1890-91	29
1891-92	43
1892-93	52
1893-94	80 approximately.
1895-96	150 estimated.

Five years hence the number will very probably exceed two hundred.

To provide for any such numbers in our present quarters is physically impossible. Indeed, we are taxed to the utmost with fifty students. It is therefore imperative that a building for electrical work shall be provided at a very

early date. The character of this work, as well as the amount of room required, renders it desirable that the building shall be exclusively devoted to electrical engineering.

The equipment of the department of Biology, when Professor Kingsley entered upon his duties, was insufficient for many students, but as it was uncertain how many would elect work in this line, the question of how large preparations should be made was a serious one. The following purchases, however, were made: fourteen microscopes, of which three are useless; two microtomes, one paraffin oven, three large and one small laboratory tubes, one set graduates, three Bunsen burners, glassware, ten dissecting pans, one thermostat, one reagent case, one case and lockers, two retort stands, five microtome knives, reagents, etc. For the coming year there have been ordered for laboratory tables, nine microscopes, an incubating oven, and some minor pieces of apparatus. The instruments, apparatus, etc., are all good, and all will be readily adaptable to the new laboratory. Owing to the pressure of students it has been necessary to fit up the lecture-room in the Barnum Museum as a laboratory for elementary biology and to reserve the basement laboratory for advanced students. The elementary laboratory has accommodations for eighteen students and the advanced laboratory for ten. Of these, thirteen elementary places and eight or nine advanced places are engaged before the beginning of the year. In general the laboratories are well equipped not only for elementary instruction but for research as well. Future expenditures will be largely in the line of more instruments for larger classes, and the replacement of glassware broken and reagents exhausted.

For material for study the department is largely dependent upon purchases and upon collection from day to day. In the summer of 1892 the Professor spent some weeks at

Woods Holl and there prepared considerable material for dissection. In the winter he supplied Professor J. E. Humphrey with cans and alcohol, who brought back many specimens suitable for class work from Jamaica. For the coming year an order has been placed with the supply department of the Woods Holl Laboratory. A collection of slides has been begun for use with classes in elementary biology. Material is being gathered for work in normal histology, which will be available not only with the College classes, but in the Medical School as well. For lecture purposes a single case of specimens will be fitted up in the lecture-room for illustrative purposes, thus avoiding a constant call upon the collections in the Museum proper. There are also over two hundred colored diagrams for illustration of zoölogical lectures.

The Library is really a part of the equipment of the department, and the establishment by the Trustees of a departmental library is a great step in advance. It seems eminently proper that those books which deal with natural history should be kept in the Barnum Museum, the place where they would be most useful. At the beginning of the year this library contained one hundred and thirty-five volumes and one hundred and thirty-five pamphlets and parts of volumes. During the year very considerable additions have been made, and on the first of September the natural history library contained six hundred and thirty-five volumes and eight hundred and twenty pamphlets and parts. Of the increase sixty-four pamphlets and parts were received from Professor Marshall; two volumes came from the Missouri Botanical Garden, one pamphlet from the National Museum; sixteen volumes and fifty-six pamphlets and parts from Professor Kingsley; but the greatest addition was from the duplicates given by the Essex Institute, from which the Barnum Museum received four hundred and eighty-two volumes and five hundred

and fifteen pamphlets and parts. From subscriptions and purchase there have been received three volumes and forty-nine parts. As a result there is now a good beginning for a working library.

In the plans for the addition to the Barnum Museum a room has been set aside for library purposes into which the present cases can be moved, and which will afford room for reading-tables and shelf room for over four thousand volumes.

In the second term the Sophomores (twenty-nine in number) studied human and comparative physiology, using Martin's Human Body as a text-book. This was supplemented by lectures and demonstrations. The course was required, and illustrated most clearly the evils of required work in science. Those who would have taken the study in an elective system did well, while those whose tastes ran in other directions acted as a continual drag upon the rest of the class. It is doubtful if the information they gained was at all commensurate with the loss they occasioned their fellows. The remainder of the work was elective, and with one or two exceptions the work was well done, and in several instances it was of the highest character. In detail the work was as follows: General Biology was elected by seven Juniors, three Seniors, one theological student, and one graduate student. The work consisted of two lectures and two hours of laboratory work each week of the year. In this course the endeavor was made to show the unity of nature, and to point out the resemblances and differences between the various groups. Some work was done on the vegetable kingdom, but the chief stress was put upon the animal kingdom. Four Juniors, who intend later to study medicine, took a second or advanced course in Zoölogy, consisting of two lectures and four hours of laboratory work a week for the year. The object of this course was to give a more

detailed knowledge of comparative anatomy, and a greater familiarity with dissection and microscopic technique. Two students from the Senior class elected histology. They studied the chief normal tissues, and later did a little work upon the embryology of the toad and the chick.

One graduate student worked in the Biological Laboratory during the year. Besides doing much of the work of the regular course in general biology, he studied for his thesis the distribution of the cerebral nerves in a South American toad. His thesis will be published in Volume Twenty-five of the Bulletin of the Essex Institute, and will be reprinted, with our plate, as the first number of the Tufts College Studies. During the spring, Miss Platt, a Fellow of Chicago University, availed herself of the facilities of the Biological Laboratory, and continued some studies begun before coming here. She made some important discoveries regarding the origin of the cartilages of the head, an account of which has already appeared in a German periodical, and will be reprinted as number two of our Studies. The time for investigation has been limited, as the installation of an essentially new department has demanded much attention. There have been published, however, two papers upon the development of the horseshoe crab, which occupy one hundred and eight pages and six plates in the Journal of Morphology. A paper has been prepared on the classification of the anthropoids, to be published as number three of the Studies. Some investigations have been continued upon the head of various vertebrates, which it is hoped will be completed before the end of the College year.

The conversion of the Olmstead scholarships into two fellowships is an important step in advance. The Fellows appointed for the year 1893-94 are: Frederic C. Kenyon, A.B., University of Nebraska, 1892, and O. A.

Simmons, B.S., Purdue University, 1893. Both come well recommended, and promise to do excellent work. The setting aside of one hundred dollars a year for the publication of the results of work done in the Barnum Museum is an important step. It will show our facilities for the increase of knowledge, and serve to increase our libraries by exchange with other publishing institutions and societies. It is hoped that work will be begun on the addition to the Museum in sufficient time to allow the use of the west wing with the beginning of the fall term, 1894. The plans have been carefully gone over, and such suggestions have been made as will render the new part far better adapted for the purposes of instruction than is the present structure. The west wing will afford accommodations sufficient for our purposes for several years to come, and will give laboratory facilities excelled in but few colleges in the country.

During the first half-year instruction was given by Professor Marshall to a class of Seniors in Practical Mineralogy, occupying six hours a week. The same class received instruction in Geology, six hours a week for the second half-year. Occasional excursions were made to places in the neighborhood of the College, for the purpose of studying the main geological features of the Mystic and Charles river valleys. A class of Civil Engineers pursued a course in practical Lithology and Mineralogy during the second half-year, with three exercises of two hours each. The progress of all the students in this department was commendable.

The past year has marked with us an epoch in the history of the department of Modern Languages. Since 1869, when the department was differentiated from that of Greek, the constantly increasing work has been wholly performed by a single professor, excepting that a duplicating of elementary work in French, with engineers and

backward academic students, has been saved by the annual appointment, since 1887, of an undergraduate instructor. This year the appointment of a graduate, rendered competent by special studies abroad to do more advanced work, has permitted a division of labor that seems a guaranty of the speedy coming of the time for a new specialization, and the differentiation of the two departments of the Romance and German languages.

During the year just ended, Mr. Lewis has taught the larger number of classes in French, of which detailed information is given below. The most advanced and certain intermediate work has remained in charge of Professor Fay in classes, as follows: French V., which, notwithstanding the catalogue restriction omitting it until 1895, was given in a modified form to a candidate for honors in the Senior class; and French II., so called, although the work done was rather that announced in the catalogue as French III. The work in French V. was principally a special study of eighteenth-century authors, more particularly the dramatists and novelists, though by no means to the exclusion of the essayists and philosophic writers. The amount of reading covered was unusually large for an undergraduate, aggregating several thousand pages.

French II. was made up of Juniors and, preponderatingly, of those entering College with the largest amount of preparation in the language, in most instances two years of high-school study, but in some cases three. As might have been foreseen, wide diversity in the amount and quality of this preparatory work developed a similar disparity in the collegiate work, though in some instances zealous application made amends for earlier deficiencies. The situation was not novel, indeed; but this year was the more noteworthy, inasmuch as some of the Freshmen were the first to enter upon the new course, A.B. without Greek. It is obvious that a more discriminating criterion than

length of previous study must be adopted in future, if the wisest classification of those who continue work begun in the fitting school is to be secured. French II., read from the classic dramatists of the seventeenth century, as follows: Racine, Molière, and Corneille. These readings were, as usual, conducted more as a literary study than for gaining facility or a practice for grammatical knowledge. Some time was given, however, to a review of the leading topics of accidence and syntax. The class numbered seventeen, — five Juniors, one Sophomore, ten Freshmen, and one Engineer, — and recited three times a week.

The instruction in German was given in three classes: I., Elementary; II., Intermediate; III., Advanced; and each recited three times a week, excepting I. four times in the first term. German I., comprising thirteen Juniors, five Sophomores, five Freshmen, thirteen Engineers, and two special students, was an unusually able class, and the work performed, if not much greater in quantity than in preceding years, was done with more than usual thoroughness. Besides covering the usual requirement in the principles of the language, the class read *Im Zwielficht* II., and Riehl's *Fluch der Schönheit*. German II. was a disappointment. Instead of being made up, as was hoped at the close of last year, of two of the most capable students of that year, able to read with facility, the class of nine members represented eight different college standings, as follows: one Graduate, one Theologue, two Seniors, two Juniors, two Freshmen, and one Special. The difficulties of French II. appeared here in exaggerated degree. The texts read were Lessing's *Minna von Barnhelm*, Goethe's *Egmont*, and *Hermann und Dorothea*, and selections from Wieland's *Oberon*. No class time was devoted to grammatical review. German III., on the other hand, was tolerably homogeneous, although containing new course Freshmen with students of more advanced classes, — an

evidence either that the preparatory teaching is better done in German than in French, or that brighter pupils elect to take it in the fitting schools, or possibly both. Of the Freshmen of the new course one had done his preparatory work during a two years' residence in Germany. He, together with one Senior, a candidate for honors, did some extra sight-reading in German literature. The class read *Wallenstein* (from *Piccolomini*, Act II., begun the preceding year), *Nathan der Weise*, *Iphigenia*, *Tasso*, and *Müller's Geschichte des deutschen Volkes*. Collateral reading in *Dünzer's Commentaries on the Classics* used in the class-room, was also carried on by part of the class.

Under the instruction of Mr. Lewis the class in French I. A. consisted of thirty-five Sophomores and Freshmen, including thirteen who presented no French at the entrance examination. This class did work as follows:

(1.) Read in class: three of *Super's Collection of Readings from French History*; *Souvestre's Le Mari de Mme. de Solange*; *Legouvé and Labiche's La Cigale chez les Fourmis*; about half of *de Maistre's Voyage autour de ma Chambre*.

(2.) Outside reading on which examination was passed: *Ourika*, by *Mme. de Duras*; *Le vieux Tailleur*, by *Erckmann-Chatrian*.

(3.) Weekly exercises in composition beginning January 14, and treating the chief difficulties of French syntax. Frequently used and typical words and idioms committed to memory and made the subject of special examination.

The class in French I. B. consisted of twenty-one students, Sophomores and Freshmen, chiefly from the engineering courses. The work of this class was as follows:

(1.) Read in class: nearly all the prose selections in *Super's French Reader*; *Souvestre's Confessions d'un Ouvrier*; chapters on *L'Évasion du Duc de Beaufort*, from *Vingt Ans Après*, by *Dumas*.

(2.) Elementary work in composition, in which the difficulties of the language were presented chiefly by analysis.

French III. was composed of one Senior, one Junior, and three Sophomores. This course included a consideration of writers of the seventeenth, eighteenth, and nineteenth centuries, and covered part of French IV. The work the class performed was as follows :

(1.) Works read in class : Montaigne's essay, *De l'Institution des Enfants* ; Pascal's *Pensées* ; Boileau's *Le Lutrin* ; Molière's *Tartuffe* ; Voltaire's *Mérope* ; Hugo's *Hernani* and *Ruy Blas* ; de Musset's *Un Caprice* ; selections from the lyric poems of Lamartine, Hugo, and de Musset.

(2.) Outside reading on which examination was passed ; selections from the correspondence of Voltaire ; biography and five essays of Sainte-Beuve ; the preface to Hugo's *Cromwell* ; chapters from Albert's *La Littérature Française au XIX^e Siècle*.

One student of French III. did extra work amounting to one hour a week for the second term. The time was devoted to the works and theories of Jean-Jacques Rousseau.

The work of the department of History during the past year has been hampered by the want of rooms and equipment. The work done was not wholly unsatisfactory, however, and showed the strong interest in this important subject which is felt among students generally. During the first term the instructor met three times a week an elective class of four Seniors and four Juniors. A study was made of modern European history from the end of the fifteenth century to the Congress of Vienna.

The topical method of work, accompanied by lectures, was used, references for reading being furnished as far as the facilities of the library allowed. The same class, with one Senior added, pursued during the second term a study

of the Middle Ages. The same method of instruction was used, with the addition of Duray's History of the Middle Ages as a manual. A similar course in Mediæval History was required of the Sophomores in the classical courses during the second term, and twenty-four men met the instructor three times a week in this subject. The method and manual were the same as for the elective class, but the work was on somewhat different lines, as required by the different circumstances of the class.

The Instructor emphasizes the need of a better equipment for this department. The rapid advance in historical scholarship, the importance of the subject, and the demand upon Tufts College to take a leading position in this, as in other recognized branches of knowledge, make it incumbent upon the authorities and friends of the College to see that its work in history does not fail for lack of the material wherewith to accomplish the best results. The much-needed class-room in Ballou Hall is now provided and can soon be occupied, but will be hardly adequate in a year's time for the growing work of the department. The opening of seminary work, engaging the attention of some of the most earnest and able of the students in this subject, promises good results which may in time speak for the College among scholars; but its successful prosecution calls for a special room equipped with needful material, as a chemical laboratory is equipped for similar scientific investigation. The Library is far behind the demand which even intermediate historical study makes upon it. Since the opening of the department about one hundred and fifty volumes have been added to the history alcoves, among them some of the most valuable primary and secondary sources of mediæval history; but the attention of friends of the College needs to be called to the fact that good historical work is peculiarly dependent upon extensive library facilities. What is

especially and immediately needed by the department is a fund for the purchase of historical material, the income to be expended under the direction of the head of the department, so that our historical collection can be developed continually and intelligently without crowding the already hard-pressed general library funds. The department has many other needs, but this is the most pressing. With the coming college year the department of history will assume an organized form, and it calls for a fair measure of support in its development.

In the department of Oratory, the Sophomore class met one hour a week for the year. United study of standard selections was supplemented with individual recitations before the class. In the second term parts of *Macbeth* were assigned for class study. The elective class in Oratory consisted for the first term of twelve students,— five Juniors, one special, and six divinity students. Two of the divinity students left the class to substitute other work for the second term. The exercises of this class consisted of individual reading and recitation, and debates on important current questions. Private rehearsal with the instructor was afforded members of both classes. Twelve students constituted the advanced class in the Divinity School, and nine the elementary class, with meetings one hour a week in each case. Bible and hymn reading, after private preparation, and the pulpit delivery in turn of parts of sermons, were followed by practical hints and comment from the instructor. There was also a special class of four students during the first term. A public recital was given on the afternoon of February 3, and the usual Goddard readings in June.

The several subjects in English Literature were offered according to the announcement in the catalogue. During the first term eight students read selections from Milton, Dryden, Pope, Addison, Gray, Goldsmith, and Johnson,

and individually, for report to the class, from other authors of the period. The class studying representative nineteenth-century writers, and consisting of six students, considered Carlyle's *Sartor Resartus* chapter by chapter, and read from Emerson, Ruskin, Tennyson, and Browning, emphasis being placed upon the last-named. General literary questions arising out of the work of the class were freely discussed. During the second term, twelve Sophomores availed themselves of their first elective privilege to enter the class reading Shakespeare, one Senior, and nine divinity students, making a total of twenty-two members. About half of the author's whole work was read, and every play assigned to the class was made the subject of extended comment by the instructor. The power and acquisition of each student were tested by requirement to prepare written treatment of one play or of some related subject, and a few of the resulting essays were read to the class. The revolutionary period, elected by a class of nine, was represented mainly through Cowper, Burns, Byron, Shelley, Keats, Coleridge, and Wordsworth, while additional writers of this crowded time were treated either in lectures by the instructor or in required essays by the students, who read them to the class. Five persons followed the course of English literary criticism from Sir Philip Sidney to Matthew Arnold, glancing also at contemporary and striving to deduce principles for justly estimating literary work. The students of the Divinity School responded readily to the school's encouragement to acquaint themselves with our literature, and formed a full proportion of every class.

It will be seen that with the dropping of English Literature, which went into full effect with this year, the chief work of Professor Shipman has been Rhetoric and Composition. This work ought to receive still more attention. With the increased attendance which is to be expected,

and under the proposed changes by which ten term hours in the department will be required of all students in the classical course, a strengthening of the teaching force will soon be indispensable. The suggestion is made, in the interest of this important work, that Oratory be made a subject by itself, with a new instructor, and that Composition be in part connected with English Literature. Not only are these two more closely related subjects, but the two departments, Rhetoric and Composition and English Literature, make substantially the one department of English. The entire work with these subjects would be done to best advantage under a close review of instruction. The development of English in the College is second in importance to no other phase of contemplated improvements. The course here suggested would give the best immediate results with the least expense for additional instruction. A competent instructor in Oratory would cost no more than a fairly promising assistant in Composition, while the present professor of Oratory would be worth several such assistants. Doubtless Professor Maulsby would find the suggested change entirely agreeable, even if it were to go into immediate effect.

The year's work in Composition consisted of not less than eight classes, as follows:

(1.) Classical Freshmen, thirty-two members, one hour a week for the year, the last two months in four divisions, each one hour a week; the work chiefly extemporaneous.

(2.) Engineering Freshmen, twenty-five members, same as (1), except that it met in three divisions the last two months.

(3.) Classical Sophomores, one hour a week the first term; themes, in connection with Rhetoric, in all four hours a week; twenty-six members.

(4.) Engineer Sophomores, same as (3), except in all three hours a week; twenty-five members. In these two

classes one hour a week means instructor's time; the students were sometimes met in divisions, and their exercises were about one in three weeks. The same may be said of (5).

(5.) Classical Juniors, one hour a week the second half-year, in connection with Psychology; in all four hours a week; fifteen members.

(6.) Classical Sophomores, six hours a week for second term; daily extemporaneous composition; elective five members.

(7.) Classical Seniors, two hours a week for first term; elective two members.

(8.) Sundry overflow "make up," two hours a week for second term; twelve members; exercises of the student varying in number.

Logic, Seniors, three hours a week for first term; eight members, reading Jevons; and Psychology, Juniors, three hours a week for second term; fifteen members, reading Davis, to some purpose,—complete the record of the year's work.

The President gave seven hours a week of actual instruction. The consideration of Ethics occupied four hours a week during the first term. This was required work for all of the Seniors of the classical course. The work was done in part by text-book with recitations, in part by discussions and lectures, and in part by investigation on lines marked out by the teacher. Political Economy was continued as a required subject during the second term. To the regular Seniors of the classical department were added the Seniors of the Divinity School. The text-book used was Marshall; but a large part of time was taken up by lectures upon the history of finance and banking, and the discussion of questions that are of vital interest. After this year, both Ethics and Political Economy will cease as required subjects. Ancient

Law was taken as an elective by seven Seniors during the first term three hours a week, and the same class continued International Law for the second term. With the growth of official duties strictly connected with the office of President, and with the number of students and the importance of the subjects assigned to him, the interest of the College would be much enhanced by the appointment of a specialist in some of these subjects.

The accessions to the Library have been fourteen hundred and seventy volumes, nineteen hundred and ninety-three pamphlets, and seventeen hundred and eighteen numbers of periodicals. One hundred and twenty-seven volumes of duplicates were returned to the Department of the Interior, so that the net gain to the Library was thirteen hundred and thirty-four volumes. The total number of volumes now in the library is twenty-nine thousand four hundred and sixty. There was added by purchase two hundred and thirty-nine volumes, five pamphlets, and seven hundred and eleven numbers. Nineteen volumes were purchased from the income of the Vannevar fund, and two hundred and twenty volumes from the income of the Joy fund. The number of volumes purchased was smaller than during the previous year, but the books were more expensive and valuable. The departments specially considered in the purchases were Biology and History. The College is indebted to Thomas Wentworth Higginson for a donation to the library of a collection of his own writings, consisting of seventeen volumes. The chief accession for the year came from the Essex Institute, and consisted, as mentioned elsewhere, of eight hundred and eighty-three volumes, seventeen hundred and nineteen pamphlets, and four hundred and fifty-nine numbers. It is composed largely of transactions and the publications of learned societies in different parts of the world. It is a very valuable addition to

our collection of books. The larger part of the donation has been deposited in the Barnum Museum of Natural History.

In conclusion, I call attention to the reports of the Divinity School, the Barnum Museum, and the Goddard Gymnasium.

E. H. CAPEN.

TUFTS COLLEGE, September 21, 1893.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President:

Forty-four students, from twelve different States, were on the roll of membership in the Divinity School during the year. Thirteen entered at the beginning in September, — three as Juniors, ten as sub-Juniors, and two as specials. The fact in the above statement in regard to the geographical constituency of the school is an encouraging one, for it shows not only extensive interest in our work, but the wider influence which the school is bound to exert through its graduates, who are likely to keep in mind the needs of the several districts from which they come.

In this connection, also, it is interesting to note that these men who come to us, some of them from remote parts of the country, are, as a rule, eager to take the full course of study, and, when not college men, ambitious to take, in addition to the prescribed theological studies, subjects in other departments of the institution. Indeed, the sentiment of the school favors ample equipment, with no disposition to abridge the courses of study, or to lessen its term. More and more it is seen that time is an important factor in professional as in other education, and that the processes which demand time are those most to be favored. Almost without exception the few students who enter for special work of one or two years, lengthen their term to two and three, and sometimes to four years. And another encouraging fact is, that among those who have fairly entered upon the work of the school, and become alive to

the demands of a modern ministry, as indicated by the subjects with which the school deals, and the methods which it employs, the conviction deepens that preparation for the professional course in the Divinity School should be ample, — a college training when that is possible, and, when that is not possible, the severest and strongest ground that can be secured for comprehensive theological study. All this, of course, is in keeping with the thought of the times, and with existing procedure in the best seminaries; for, while capable students may lessen the years of undergraduate work in the College with no abatement of its amount or its quality, the facts show that they are not anxious to cut short the term of study which aims to fit them for the great work of the Christian ministry. The tendency, even in the best seminaries in this country, as well as abroad, is towards a longer, not to say more complete, course in professional training; and this report would be unfaithful to the opinions and convictions of students of all grades of intellectual life and formal education, if it did not strongly suggest to clergymen and others who are awake to the needs of the churches, and interested in the candidacy of an efficient ministry, the importance of wide and thorough preparation both in attainment and in discipline for theological study, — a college course when that can be had, and, when that cannot be taken, such careful training as our best high schools and academies afford. It is right to say, however, that the spirit of the school is generous towards all earnest men who see that the Christian ministry is their vocation, and that it is eager to help them, so far as help can be given along the lines of its prescribed work.

From year to year the report of the Divinity School must of necessity cover very much the same ground and include nearly the same topics. It can be said, however, that at no period of its history has the work of the school been carried

on more successfully than during the past year, favored as it has been by improved facilities for the students in dormitory accommodations, and for the teachers, in large, well-lighted, and well-ventilated lecture-rooms. Nor have these external helps affected the specific work of the school alone; influences of a more general kind, such as contemplate social refinement and religious culture, have been made possible, as never before, by the fit and ample furnishings of the chapel and the inviting appointments of the reception-room, thus vindicating the wisdom and beneficence which provided these great helps towards the wider education of a young and growing ministry.

No change has been made in the spirit and methods of the school. A glance at the catalogue of the College will show that the curriculum of the theological department is a broad one, as suited to a catholic constituency, to the demands of a candid and manly culture on the part of students, and the generous conservatism of the times in which we live. It may be said, also, that the methods of the school are dictated somewhat by its position, and its vital connection with a College which encourages independent research and that mental freedom which is its rightful inheritance.

It is not deemed necessary to state specifically what is done by each professor. It is enough to say that all the work of the school has *prime* reference, not to acquisitions in the form of knowledge, but to skill in the use of knowledge. Two factors of ministerial equipment are constantly kept in mind, — knowledge, and ability to use the knowledge; the latter receiving important reference in all class-room work. The call, indeed, is for ministers who are well furnished and well trained intellectually; and yet the more frequent demand from the churches is: Send us a man who can do something besides write and preach fine sermons; a man who knows how to use his

powers and his acquisitions, and can adapt himself to conditions ; a man who knows what truth is, and how to teach it ; what work is to be done, and how to do it, — the stress in requirement at all points being upon practical efficiency.

And while there is this constant reference to discipline and skill in all the teaching of the school, more and more the demands of the new benevolence and of the new social and economic questions are taken into account. The school is not only in sympathy with the idea of a College settlement, but aims to provide for it and for its success, by special instruction and training on sociological lines ; and we are not without hope that formal recognition of the importance of the new methods of church work will be made by the trustees of the College in the appointment of a specialist to this great department of ministerial preparation. The school ought to be able at once to add to its growing reference library the books that are appearing, in this and other countries, on sociological subjects, that the present teachers and the students now in the school may know the literature of the new science, and so widen their teaching and learning to ampler and more various relations in social life and humane work ; and so, too, that the practical success thus given to the existing work of the school may be anticipatory of the larger, the accruing work which the world is requiring at the hands of our professors, for which the young clergyman must be fitted, and which at no distant day must have distinct illustration in the regular work of the school. And this call for reference-books on a special subject suggests the one great need of the Divinity School, and that is, a consulting library, which shall be open both to professional students and those men in the College who are pursuing graduate studies. To the Divinity School such a library is a necessity, for much of its work is done by the students on independent lines of research, and much of the

effective work of the teachers hinges upon acquaintance with the most recent expressed thought on the subjects that are discussed in the class-room. Therefore the professors ought to have the privilege, each for his own work, of purchasing books as they appear, and at a time when the need is imperative. As the matter is now managed, the books, in answer to request, are likely to reach the library a long time after the special subject for which the books were wanted is passed. Efficiency in the work of the school would be promoted to a degree hardly to be realized by persons remote from its duties, if the teachers, within the limits of a defined appropriation of funds, could be permitted to order books from time to time as they appear from the foreign or the domestic press.

This report ought not to close without reference to two important phases of our work:

1. Political Economy is now included among the required subjects of study, and for students who have had good drill in English and sufficient linguistic preparation, English Literature and the French and German languages are advised. Attractive courses in Science, also, are offered to the theological students, which they are allowed to take when the lectures do not interfere with the prescribed work.

2. The other phase of our work is sufficiently indicated by the expression: Divinity School (or College) extension. More and more the resources of the school are taxed for the help of parishes in the way of suggestion or advice in the solution of important problems, and for the help of clergymen who are called to deal with the new questions, and to take up some part of the manifold service which the new social conditions are forcing upon the attention of all Christian workers. The larger part of this most useful work inevitably falls to the Dean of the school, and involves a wide correspondence. It is a work, however, that yields solid results.

Acknowledgments are due to the Trustees of the College, to the clergy, especially to those who are numbered among the alumni of the school, and to the many friends who have remembered us in our work, for the wise provisions which consult the health and comfort of students, and for generous gifts to the library, chapel, and lecture-room.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE, September 21, 1893.

THE BARNUM MUSEUM.

REPORT OF THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President :

The Director of Barnum Museum respectfully submits the following report :

Friends of the College have shown continued interest in the prosperity of the Museum by several valuable contributions.

Messrs. Barnum & Bailey have sent to Ward, of Rochester, at our request, the cadavers of the following-named animals, which have been suitably mounted and forwarded to us :

- 1. An African ostrich, full-grown.
- 2. The skeleton of the same.
- 3. The skeleton of an Indian tapir.

It would seem proper here to acknowledge our great indebtedness to Messrs. Barnum & Bailey for the many favors received during the few years that have elapsed since the Museum was founded by him whose name it bears. In addition to the fine collection of mounted animals originally given by Mr. Barnum, which embraces a series of three hundred and fifty-five in number, the Museum has received since 1884 the following valuable additions through the kindness of Messrs. Barnum & Bailey :

- | | |
|---|----------------------------|
| 1. Chlorocebus cynosurus | Mounted skin and skeleton. |
| 2. " " (Albino) . | " " |
| 3. Nasua rufa (Coati) | " " |
| 4. Macacus rhesus (Bunder) | " " |
| 5. Cynocephalus babuin (Baboon) . | " " |

6. <i>Cynocephalus mormon</i> (Mandrill) .	Mounted skin and skeleton.
7. <i>Portax pictus</i> (Nilghau)	“ “
8. <i>Cervus canadensis</i> (Elk)	“ “
9. <i>Oreas canna</i> (Eland)	“ “
10. <i>Oryx leucorix</i> (Gemsbok)	“ “
11. <i>Alcelaphus caama</i> (Hartebeest) .	“ “
12. <i>Felis leo</i> (Lion)	“ “
13. “ <i>tigris</i> (Bengal Tiger)	“ “
14. “ <i>concolor</i> (Cougar)	“ “
15. “ <i>leopardalis</i> (Leopard)	“ “
16. <i>Auchenia guanaco</i>	“ “
17. “ <i>vicuna</i>	“ “
18. <i>Ursus maritimus</i> (White Bear) .	“ “
19. <i>Hystrix cristata</i> (Porcupine) . .	“ “
20. <i>Macropus giganteus</i> (Kangaroo) .	“ “
21. <i>Halmaturus thetidis</i> “ .	“ “
22. <i>Dycotiles torquatus</i> (Peccary) . .	“ “
23. <i>Atelodus bicornis</i> (Rhinoceros) .	“ “
24. <i>Bibos indicus</i> (Zebu)	“ “
25. <i>Struthio camelus</i> (African ostrich) .	“ “
26. Chimpanzee	“ “
27. Elephant (“Jumbo”)	“ “
28. Indian tapir	“ “
29. Giraffe	“ “
30. Black bear	“ “
31. Fallow deer (Albino)	“ “

Mr. James Lockwood, to whom the Museum is indebted for former liberal contributions, has sent to Barnum Museum a series of one hundred and thirty-five good fossils from the neighborhood of Chicago. Also a collection of fossils has been received from Mr. J. W. Beede, of Topeka, Kansas.

Mr. William Marden, of Charlestown, has given a good collection of minerals and shells numbering about seven hundred specimens.

Respectfully,

JOHN P. MARSHALL,

Director.

TUFTS COLLEGE, September 21, 1893.

THE GODDARD GYMNASIUM.

REPORT OF THE GODDARD GYMNASIUM.

To the President :

The Director of the Goddard Gymnasium begs to submit the following report of the work in Physical Culture during the past College year :

As in previous years, the work in Physical Culture has been based upon a careful physical examination of the men who desired to pursue the offered courses. Examinations were begun November 1. In all, one hundred and fifteen men were examined, fifteen more than in any one year before. In these examinations, special pains were taken to find out the working condition of the vital organs. The different parts of the body were also measured, strength-tests applied, bodily defects noted, and personal habits investigated. Information, too, was obtained in regard to parents and grandparents, to help explain personal characteristics that might have been inherited. The results obtained in these physical examinations have been arranged and preserved for future use, and a copy of his own measurements and strength-tests has been furnished to each student.

One hundred and eleven men began the work of physical culture about the middle of November, a gain of twenty-one over last year. The exercises were of two kinds, general and special. The special exercises were performed by the students individually, under the direction of the instructor, and were intended to correct personal defects which were discovered at the physical

examination. For general exercise, the men were divided into three classes. The first division contained the new men from all departments of the College; the second, men who had been in College one year; and the third, men who had been in College two or more years. The men in the first division numbered fifty-three. They worked with wands, and performed simple exercises upon the vaulting-bar, horse, and suspended parallel bars. For work on the above-mentioned fixed apparatus the first division was subdivided into three squads, physical strength and gymnastic ability affording a basis for division. Two men, selected from the class, led two of these squads, while the instructor directed the third. The second division contained thirty-two men, who were divided into two squads. This division did free movements, worked with dumb-bells, and carried forward the work of the Freshman year upon the fixed apparatus. A dumb-bell exercise and still more advanced work upon the fixed apparatus constituted for the most part the work of the third division, which numbered twenty-six men. The work of the third division was discontinued toward the end of February, and another class, containing the candidates for the foot-ball team, was organized in its place. These several divisions, except the third, met three times a week till the first of April.

During the year several valuable pieces of apparatus have been added to the equipment of the Gymnasium, and more ought to be added to meet the necessary demands of the increasing number of students.

Respectfully submitted,

FRANK W. DURKEE,

Director.

TUFTS COLLEGE, September 21, 1893.

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ANNUAL REPORT

OF THE

PRESIDENT

OF

TUFTS COLLEGE

1893-94



BOSTON

ALFRED MUDGE & SON, PRINTERS

No. 24 FRANKLIN STREET

1895



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1895

PRESIDENT'S REPORT.

1893-4.

To the Honorable and Reverend the Trustees of Tufts College :

GENTLEMEN : The President of the College has the honor to submit the following report for the academic year 1893-4, namely, from Sept. 21, 1893, to Sept. 20, 1894.

No member of the Corporation has died during the year. The business devolving upon this body has been discharged with promptness and punctuality. In the increase of business, however, incident to the growth of the College, the question has arisen whether some changes in the constitution of the corporate membership might not be of advantage. It is not easy to assemble thirty gentlemen, many of whom reside at a considerable distance from the College, on a hasty call, however urgent. Yet there is a demand for meetings more frequently than they are now provided for in the By-Laws.

Moreover, the time has arrived when the Alumni should have a closer and more active relation to the government of the College. This is absolutely essential to secure from the Alumni that cordial sympathy and hearty co-operation on which a large measure of the prosperity and progress of the College depend. The Alumni cannot be expected to manifest a very warm interest in the College unless they can be made to feel that they have, through their own chosen representatives, a voice in the management of its affairs and the determination of its policy. A large percentage of the present members of the Board of Trustees are graduates ; but they have not been chosen to the places they fill by the Alumni, and, therefore, are not regarded

as their representatives. It would doubtless be unwise to turn over at this stage the entire administration of the College into the hands of the Alumni, nor do I understand that such a step is proposed or suggested. It would seem to be entirely practicable, and I have no doubt it would be satisfactory to the Alumni to have one body about one third the size of the present Board of Trustees that should be charged with the financial management of the institution, and have the initiative and final vote in all matters of administration. Such a body could meet frequently at stated intervals, or could be called together speedily whenever occasion should arise for so doing. In addition to this there could be another body of more numerous membership, chosen from and by the Alumni, whose meetings need not be so frequent; yet such a body might have active oversight of all the departments and work of the College, and give counsel in regard to appointments and important changes of departments or methods. The creation of two such boards of government in the place of the one we now have would make the constitution conform more nearly to the prevailing type of New England colleges.

Appointments have been made as follows: —

GARDNER C. ANTHONY, A. M.,

Professor of Technical Drawing and Dean of the Bromfield-Pearson School.

ARTHUR MICHAEL, PH. D.,

Professor of Chemistry.

ANSON B. CURTIS, PH. D.,

Professor of Hebrew and Old Testament.

WARREN S. WOODBRIDGE, A. M., B. D.,

Woodbridge Professor of Applied Christianity.

ERNEST W. CUSHING, A. B., M. D.,

Professor of Gynæcology.

SAMUEL G. WEBBER, A. B., M. D.,

Professor of Neurology.

JOHN A. TENNEY, M. D.,
Professor of Ophthalmology and Otology.

HAROLD WILLIAMS, A. B., M. D.,
Professor of the Diseases of Children.

ARTHUR E. AUSTIN, A. B., M. D.,
Professor of Medical Chemistry and Toxicology.

CHARLES A. PITKIN, A. M., PH. D.,
Professor of General Chemistry.

JOHN L. HILDRETH, A. B., M. D.,
Professor of Clinical Medicine.

Appointments for one year : —

GEORGE F. EAMES, D. M. D., M. D. *Lecturer on the Diseases of the Nose and Throat.*

W. P. DERBY, M. D., *Instructor in Gynæcology.*

RUFUS E. DARRAH, M. D., *Lecturer on Clinical Surgery.*

GEORGE A. WEBSTER, M. D., *Lecturer on Otology.*

H. CUSHING GALLISON, M. D., *Lecturer on Surgical Pathology.*

GEORGE E. WHITEHALL, M. D., *Prosector of Anatomy.*

THOMAS F. GREEN, M. D., *Assistant Demonstrator of Anatomy.*

W. H. DETWYLER, Ph. B., *Tutor in French, and Teacher in the Bromfield-Pearson School.*

THOMAS WHITEMORE, A. B., *Instructor in English.*

FRANK G. WREN, A. B., *Tutor in Mathematics and Teacher in the Bromfield-Pearson School.*

CHARLES ST. CLAIR WADE, A. M., *Tutor in French and Teacher in the Bromfield-Pearson School.*

GEO. A. FURBISH, *Teacher in the Bromfield-Pearson School.*

Re-appointments for the year have been made as follows : —

THOMAS M. DURRELL, M. D., *Lecturer on Medical Jurisprudence.*

W. R. WOODBURY, M. D., *Lecturer on Hygiene and Medical Director of the Goddard Gymnasium.*

FRANK P. BROWN, M. D., *Assistant in Pathology.*

ALBERT E. ROGERS, M. D., *Instructor in Materia Medica.*

F. W. DURKEE, A. M., *Instructor in Chemistry and Director of the Gymnasium.*

F. T. DANIELS, A. M. B., *Instructor in Civil Engineering.*

LEO R. LEWIS, A. M., *Instructor in Modern Languages.*

There were also fourteen students in the Bromfield-Pearson School, making the total number of newly-enrolled students two hundred and fourteen.

The whole number enrolled in the College, including the Bromfield-Pearson School, is three hundred and fifty-two. They are distributed as follows :

Graduate Department	10
Courses in Liberal Arts	105
Engineering Courses	89
Special Students	14
	218
Divinity School	40
Medical School	80
Bromfield-Pearson School	14
Total	352

Two years ago the College was opened in all departments to women on the same terms as to men. In response to that provision we have of women in the

College of Letters	22
Divinity School	4
Medical School	23
Graduate Courses	2
Total	51

Women have come quietly and unobtrusively into their places, and, so far as their presence in the classes is concerned, have not caused the slightest friction.

The whole number of degrees given in course at the last Commencement was sixty-six, as follows : —

Bachelor of Arts	14
Bachelor of Philosophy	1
Bachelor of Electrical Engineer	12
Bachelor of Civil Engineer	1
Electrical Engineer	2
Master of Arts	6
Bachelor of Divinity	8
Doctor of Medicine	22
Total	66

The buildings reported last year as about to be undertaken have nearly all been completed.

The Bromfield-Pearson building was made ready for occupancy early in the college year, and has been in constant use. The drawing-rooms afford accommodations for over fifty students at one time. The wood-working and lathe room and the forge shop have been fitted up and thoroughly equipped, affording ample facilities for our engineering students to receive instruction in shop work. In addition to these there are spacious recitation rooms devoted to the use of the regular students of the school, of whom there was a goodly number in attendance. Very satisfactory progress was made by this class of students and several will enter some of the engineering courses in the College next year.

The new commons building has been completed and will be ready for occupancy with the opening of the College year. It is an impressive and substantial structure, and contains one of the finest and most attractive dining-rooms that I know of in connection with any college. The building contains other much needed facilities, among which is a convenient and commodious post-office. The mail of the office has increased much of late and there was great need of better means of serving it. The post-office room also gives space for the college bookseller, an officer whose function is becoming more important every year.

The improvements begun upon East Hall a year ago have been entirely carried out during the vacation, and this hall, although almost the oldest of our buildings, is now one of the largest and most comfortable of the dormitories owned by the College.

Metcalf Hall has nearly reached its completion. It will be in a habitable condition early in the term, and will be ready to be turned over to the Trustees by the donor in a few weeks. In solidity, durability, and fineness of finish it is unquestionably one of the very best buildings belonging to the College.

No expense has been spared to make it a beautiful home for young women. It is an ornament to the College grounds, and it will be a building of great utility for many years to come.

The extension to the Barnum Museum of Natural History ordered by the Trustees in the early part of the year, was placed under contract, and work upon the same was begun as soon as the ground opened in the spring. By the terms of the contract the structure should have been ready for use by the middle of the current month. But owing to some delay in obtaining material, the work had to be suspended for several weeks during the summer. Consequently, the building will hardly be in a condition to be occupied before the middle of November. This will occasion some inconvenience to the department of Biology, but as it will be but temporary, the inconvenience can be borne.

The quarters assigned to chemistry have been growing more and more cramped and inadequate for a series of years. The great increase in the number of students taking chemistry, together with the return of Dr. Michael to the College and the consequent enlargement of the courses in chemistry, made ampler quarters imperative. Acting, therefore, on the suggestion and advice of the President, the Executive Committee, soon after Commencement, voted to erect a temporary structure of wood for a chemical laboratory. The work has been pushed forward with all haste, and within a short time from the opening of the session, the general laboratory and the lecture room will be fitted for use. The other laboratories will be completed and furnished as rapidly as possible. Although the building is intended to be only temporary and is as inexpensive as is consistent with the uses for which it is designed, it has a thoroughly modern equipment, and cannot fail to give a decided impetus to chemistry in Tufts College. The removal of the chemical laboratories from Ballou Hall will afford much needed facilities for recitation and lecture rooms in that building.

The Medical school has had an exceptionally prosperous beginning. Eighty students matriculated, a number much larger than was expected. Twenty-two received the decree of Doctor of Medicine at the Commencement. A number of men, distinguished and learned in their respective specialties, have been added to the Faculty. The prospect of an increased attendance of students during the next College year has induced the Faculty to enlarge their quarters, and increase and improve their laboratories. The clinical privileges of the school have been also much extended and improved. The need of a more suitable building, larger and better situated, in a more quiet part of the city and nearer some of the great hospitals, is very great. It will soon become an absolute necessity. The interest that has been awakened in the school among the medical fraternity and in the community at large proves that the College made no mistake in taking up this enterprise.

The new method of meeting the requirements for the ordinary degrees, announced at the beginning of the year, was not intended to become obligatory until next year. But the proposed change met with such favor from the student body that it was put into immediate operation. Perhaps nothing has been done in the whole history of the College that has so powerfully quickened and strengthened the interest of students in their work. Not only are men seeking by this means to shorten their time for obtaining their degrees, but they are choosing their courses with direct reference, both to their mental aptitudes and tastes, and to the specialties which they propose to follow. Besides heightening their interest in their work by this means, the results attained by them are far more satisfactory than under the old method in which so large a part of the students' work was compulsory. In the nature of the case professional studies are less elastic and free than general studies. Still the Faculty are studying the problem with reference to the engineering courses. They are anxious, if possible,

that a system that has proved itself so beneficent on the classical side of the College should be applied to some extent in the professional departments.

I call attention to the following account of the several departments of instruction : —

Latin.—The work in the Latin department did not differ materially from that of the preceding year. The Freshmen read the twenty-first book of Livy, Cicero's Cato Major, and two books of the Odes of Horace. They also had one exercise a week in Roman History and Antiquities and one in Latin Composition.

Twenty Sophomores elected Latin for the year, ten of them making it their major subject. They read some of the Satires and the Ars Poetica of Horace, one book of Cicero's Tusculans, the Captives of Plautus, and the Germania and Agricola of Tacitus. Some of them also had one exercise a week in Latin Composition for one term.

Two Juniors did about the same work as was done by the Sophomores.

One Senior did a large amount of work, reading portions of Juvenal, Pliny, Catullus, Lucretius, and Quintilian, graduating with honors in Latin and Greek.

Greek.—Two Juniors elected Greek with Dr. Schneider the first term, and three the second term. They recited thrée times a week throughout the year.

The text-books were: Idyls of Theocritus, Plato's Symposium, Prometheus of Æschylus. For sight reading: Selections from Lucian, Symposium of Xenophon. After reading Plato's Symposium, several lectures were given to the class to elucidate the aim and purpose of the writer. The subject matter was frequently discussed. The characteristics of the various speakers were set forth as well as the relation of the several orations to each other. From time to time there were also written prose compositions.

Two Seniors elected Greek throughout the year. They recited three times a week. The text-books were five books of Aristotle's *Ethica Nicomachea*, *Frogs* of Aristophanes, *Prometheus* and *Agamemnon* of Æschylus, reading at sight of selections from various writers. The *Ethics* of Aristotle furnished a number of subjects for discussion, and during many an hour so-called translation made very little headway, the time being consumed in discussing many ethical points, and at the end of the year the class expressed their satisfaction and pleasure in the warmest terms.

The professor of Classical Philology gave instruction in the Greek department aggregating fifteen hours a week. Six hours were devoted to the elementary Greek, and three hours each to Greek II., Greek III., and the graduate course in Classical Philology.

The addition of an hour to Greek I. made a marked difference in the quality of the results. Each member of the class showed an attainment equivalent to that of the average student fitted in three years at any of the better preparatory schools. Great interest in Greek also was noticeable, and every member of the course has continued the subject this year, two electing it as a major.

The work of the regular Freshmen was in amount and quality about the same as in previous years, except that the curtailment of the course one hour compelled the omission of the usual reading in the *Odyssey*. Portions of *Xenophon's Memorabilia*, the histories of *Herodotus* and *Thucydides*, and the entire *Philoctetes* of *Sophocles* were carefully read and reviewed. Lectures were given on the authors read and on the Greek theatre.

The Sophomores maintained their previous reputation for scholarship by accomplishing a more extensive and accurate reading of the orators and dramatists than has before been supposed possible. Representative speeches of *Lysias*, most of

Æschines' *Contra Ctesiphontem*, and the whole of the *De Corona* of Demosthenes, with lectures on the development of oratory and on the style of each of the great *rhétors*, composed the course in Greek oratory. The work on the dramatists consisted in reading one play each of Sophocles, Euripides, and Aristophanes, and in lectures adapted to the subject.

The Graduate class had three members, two of whom were granted the degree of A. M. at Commencement. In the course, sight reading and advanced Greek composition were practised to a considerable extent, while the reading covered nine of the longer orations of Demosthenes, the *Iphigenia* of Euripides, and the *Trachiniæ*, the *Antigone*, and the *Ajax* of Sophocles. Lectures on the Athenian trierarchy, the Heracles legend, and the history of the Sophoclean text were given. The work of the students was satisfactory throughout.

Mathematics.—This year has been chiefly distinguished, in the department of Mathematics, by the limit that the new course of studies has imposed on this department. The required Mathematics now is limited to Algebra, solid and spherical Geometry, and Trigonometry. As these studies are taught but three hours a week during a year, and as the Engineers are required to take more hours of mathematics in the same time, it has been found necessary to teach the students of the two departments in separate classes.

The students in the literary department of the College were taught by the professor. As the large number necessitated a division into two sections, the number of hours a week was doubled. The Engineers were also taught in two sections by Mr. Sanborn and Mr. Myrick. At the middle of the year a course of three hours a week in advanced Algebra and the elements of Determinants was offered to all students. This offer was embraced by four Freshmen, two Engineers, two Juniors, and one Senior.

Analytic Geometry, as a required study, was taught to the Engineers by Mr. Sanborn in the first term of the Sophomore year. As an elective, the professor taught the same subject to two Sophomores and one Senior, continuing the subject through Higher Plane Curves and Analytic Geometry of Three Dimensions during the whole year.

The Sophomore Engineers commenced the study of Calculus with Mr. Sanborn at mid-year. The Senior Engineers, who had begun the study at the middle of the preceding year, continued the study through the year, and also during the second term took a course in Least Squares, under the professor.

The professor also had an elective class of two Seniors, — Mr. Wren and Mr. Hodgdon, — in advanced Calculus and in advanced Determinants. These two gentlemen had studied Mathematics through their whole course with distinguished excellence in their work.

It will be seen that during the whole year the professor had to instruct in four courses of Mathematics in each term. Although these courses, being different branches of the same general subject, differ from one another almost as much as two languages, the work was done to the satisfaction, both of the professor and the students. With the Engineering Course extended to four years, and with Mathematical Courses in the College of Letters also running through four years, and with the classes so large as to require teaching by sections, it is expected that in the future it will be necessary to hand over the work more and more from the head of the department to the instructors.

The Walker Special Instructor, during the first term, met the Sophomore Engineers, twenty students, four times a week in Analytic Geometry; the Sophomore Electrical Engineers, sixteen students, once a week, in Elements of Mechanism. The Freshman class of engineers on account of its size was divided into three divisions in Mathematics, of which the Walker Special Instructor met two, containing about eighteen

students each. These were each taken by him, two hours a week for six weeks, in Spherical Geometry, two hours a week for ten weeks in Plane Trigonometry, and four hours a week for the term in Algebra. During the second term he met the Sophomore Engineers three times a week in Calculus; and the two sections of the Freshmen Engineers three times a week each in Spherical Trigonometry and the applications of Trigonometry.

Under Mr. Myrick one division of Freshman Engineers was given Algebra four times a week for the first term. The same division took Spherical Geometry and Plane Trigonometry twice a week the first term; Geometry being finished in twelve recitations, and Plane Geometry finished at end of the first term. In the second term the same division took Spherical Trigonometry and General Problems three times a week and finished the subject. In Electricity the Juniors were given theory and calculations twice a week throughout the year. During second term the Sophomore Engineers were given work in the Physical Laboratory three times a week on the subjects of Mechanics, Sound, Heat, and Light.

Civil Engineering.—In the department of Civil Engineering, the Seniors and one student from the classical department recited in Applied Mechanics four times a week for the year. The text-book used was Church's Mechanics of Engineering. Some work in the testing room was done by the class, and many additional problems solved. The Senior Civils recited four times a week in Baker's Masonry Construction and Merri-man's Hydraulics, a full term being devoted to each subject. They also studied Railroad Engineering and Bridge Construction during the year, reciting three times a week.

The class in Steam were given instruction four times a week for the second term, Holmes' steam engine being used. Informal lectures were often given, and students were practised in the application of the Indicator for measuring power and

determining adjustment of valves. The second year Civils were instructed in Practical Astronomy during one term, Loomis's Treatise being used.

A complete Buff and Berger transit has been purchased for the department.

Drawing and Shopwork. — The number of students in attendance in the department of Drawing is as follows: Freshmen, Drawing, fifty-one; Freshmen, Descriptive Geometry, fifty; Sophomores, nineteen; Seniors, thirteen. The Freshman Engineers and the drawing in the department of Civil Engineering have been chiefly taught by Mr. Daniels, who reports below, on their progress and character of instruction. The Sophomore Electrical Engineers, numbering seventeen, began the study of machine drawing and pursued the same during the first term. The work consisted of a study of the essentials and technicalities of machine drawing, and involved the making of detailed and assembled drawings by the conventional methods in regular practice. Six plates were required, the subjects being bolts, connecting rods, a valve, and back rest. The second term was chiefly devoted to the study of Kinematics, especially as applied to gearing. On this topic eight plates were required together with an examination at the close of the subject.

The course for Senior Electrical Engineers, numbering thirteen, consisted largely of machine drawing during the first term. This was followed by a study of the elements of machine design. Each student was required to design a valve from such data as would usually be given a designer, and a working drawing made of the same. Much time was also spent in the drawings for thesis work, the character of which was varied as much as possible in order to better instruct concerning the technicalities that serve to express graphically the engineer's ideas. Two periods per week of two hours each constituted

the required time for the drawing of both Senior and Sophomore Electrical Engineers.

The size of the class in Descriptive Geometry necessitated a division of the same, and the introduction of some changes in methods of teaching. The class received one general lecture each week on subjects under consideration for that period, and the three remaining exercises were conducted by recitations and the solution of special problems. One division of the class was instructed by Mr. Daniels.

In Mechanical Drawing, in charge of Mr. Daniels, the Freshmen did thirty-one plates including the usual work in plane geometrical problems, projections, intersections, isometric drawing, flat tinting, and lettering. During the first term the entire class of about sixty worked together, too many to attain the best results under a single instructor. As arrangements for shop work could not be completed before midyear, five exercises a week in Drawing were done, with only one during the second term, thus making the three required exercises a week for the year. Prof. Anthony had charge of the class twice a week during the first term.

The Sophomore work in Drawing consisted almost wholly of plotting and topography, colors being introduced in the latter. The use of profile and cross-section papers was taught, as was also that of the planimeter on plane surfaces. This class had Surveying, both theoretical and practical, throughout the year. Field operations were performed with compass, transit, and level, and included complete surveys and computations for a problem in earthwork. The number of students with whom this was required work was four, but the class was increased by two from the Bromfield-Pearson School, and three from the electrical course. The results attained were more than usually satisfactory because it was possible to follow out a more logical order in field operations.

There was but one student to finish the Junior civil work,

and one the three-year graduate course. These worked together in field practice, but their Drawing was somewhat different, the Junior devoting considerable time to structures and machine details, the graduate work including more topography.

During the year there was nearly completed a model which will show the distribution of steam in an engine cylinder under varying conditions; the model being adjustable for valve travel, lap, lead, and connecting-rod length. Valuable assistance was rendered in this work by C. H. Page, of the Junior class.

The two classes in the shop department have been taught by Mr. Furbish. One in Carpentry and Pattern Making, numbering forty-seven Freshmen Engineers, was divided into three divisions, each of which was required to attend five hours a week, in two periods. This course consisted of practice in the use of the ordinary hand tools and the making of a variety of joints necessary to the attainment of the skill required for pattern making. This was followed by practice in the use of the turning lathe, the exercises being limited to that of making all the cuts required in ordinary turning. On completing this introductory course, the making of patterns was begun, and a considerable variety of practical and very satisfactory work was done. The class was also instructed in the moulding of these patterns.

The class in Forging numbered seventeen and was composed of Sophomore Engineers. The course consisted of the forging and welding of iron and steel, the making of tools and tempering of the same, brazing, and much of the fitting of forges and anvil tools.

The delay in starting this department necessitated the making of three periods, of two hours each, a week, and even then the allotted time was found insufficient for the course.

Physics.—The class in Physics I, of thirty-nine students, attended the course three times a week for the year, and com-

pleted the program work. A class in Astronomy of three members was conducted through the first term. A course of lectures, twice a week, on the Philosophy of Physics was given the first term, attended by twelve College students and a varying number from the Divinity School. The last term, Course 8, was given to twelve students. It was a study of Spencer's First Principles. A single student took Course 2, laboratory work, in Physics. One student took a graduate course in Physics for the degree of A. M. His thesis was on the electro-motive forces of various specimens of carbon.

Of course, it is understood that so long as the Electrical Engineers are so numerous, and facilities for laboratory work so meagre, it is impossible to do much in this department in the way of advanced work or research, a matter much to be regretted. The repute of the College for its Electrical department is great all over the country. When it was formed, in 1882, it was not contemplated that it would be likely to have more than a dozen or two at most; now there are over a hundred, and they have nearly submerged the department of Physics. The present class in Physics has seventy-two members. They fill up the largest recitation room in the College and are so close that examinations are held with difficulty. The class cannot be divided on account of hours. The only way to handle it is to treat the subject wholly by lectures and have a written examination occasionally when an assistant can take a part of the class in another room at the same hour. This is a condition of things which ought not to last. Larger recitation rooms are a grave need. The apparatus for the department needs replenishing. Little has been added for several years outside of the department of Electricity, and that chiefly on its technical side. There are large and interesting fields in Physics, where now we can do but very little in the way of illustration.

Electrical Engineering. — The Professor of Electrical Engineering gave instruction to the class in elementary mechanics, forty-nine Freshman Engineers, one Sophomore, and one Special, and seven students of the Bromfield-Pearson School, by means of lectures, supplemented each day by numerous practical problems. The work of reviewing the great number of papers thus presented was satisfactorily performed by three Sophomores, each of whom corrected about fifty papers a week.

The work of the Sophomore Electrical Engineers, thirteen Sophomores and one regular Junior, in the physical laboratory was conducted by Mr. Myrick, and covered the greater part of Stewart and Gee's Practical Physics, Vol. I., with select experiments in sound, heat, and light.

The Junior Engineers, two Juniors and one Graduate student, were instructed in the theory of magnetic and electrical measurements by means of lectures delivered by Mr. Myrick.

The Senior Electrical Engineers, thirteen Seniors, one Graduate, and one Special student, read Thompson's Dynamo Electric Machinery during the first term and worked out numerous exercises in dynamo design. During the second term the same class read nearly the whole of Fleming's Alternate Current Transformer, Vol. I. Besides the usual laboratory work from members of the class, twenty so far completed the 15 k. w., 110 volt, constant potential dynamo, previously begun, as to render it available for use. Others of the class assisted in the construction of the patterns for a large Mordey alternator, the carcass of which is now practically complete. Two of the class candidates for honors read Fleming's Alternate Current Transformer, Vol. II., and Bedell and Crehore's Treatise on Alternating Currents.

A very urgent need of the department is a fund, the income of which could be applied to the purchase of apparatus and supplies. The opportunity for development that will be afforded by the Robinson Engineering Building will render the

possession of such a fund second only in importance to that of the building itself.

Chemistry. — The work in General Inorganic Chemistry, Course I., has, on the whole, been more satisfactorily performed under the new elective system than when it was required of the Junior class; and the slight extension of time given to the subject by the new program has been very acceptable to the instructor and profitable to the students. Twenty-one students have taken Course I., which calls for three term hours during the year. Half of this time has been devoted to lectures, illustrated by numerous experiments and supplemented by frequent recitations and written reviews, and half to laboratory work. A change in the program made it necessary to give the last half of Course II. to three Seniors and one Graduate student. At the same time Course II. was begun by two Seniors and one Special student, and at midyear by two Juniors, who were anxious to get what Chemistry they could while in college. Instruction has, therefore, been given to two classes in Qualitative Analysis throughout the year. Courses III. and IV. have been completed by three Seniors and instruction given to two Graduate students. The instructor's investigation of Cape Breton coal has been completed during the year, and another on the nickel ores of the Sudbury District, Ontario, Canada, is nearing completion. The last investigation involved a trip by the instructor to Sudbury.

Geology. — In the department of Natural History with Prof. Marshall, embracing Mineralogy and Geology, the Senior Class received the usual instruction in Mineralogy, with six hours of practical work each week during the first term. The same class during the second term received instruction in Geology by text-book and lectures six hours each week. A class of Engineers also received instruction in Mineralogy, with six hours of practical work each week during the second term.

Biology.—Instruction has been given in Biology by Prof. Kingsley as follows: 1. Elementary Biology. The course running through the year was elected at the beginning by thirty-three students, of whom twenty-one received credit at the close. Besides these, the lectures were attended by three advanced students. The course consisted of two lectures and four hours of laboratory work a week, and as the laboratory accommodated but eighteen, it was found necessary to divide the class into sections and to employ Mr. Kenyon as demonstrator. At the middle of the year three of these students preferred to follow the botanical side of the subject, and these three were placed in charge of Mr. Kenyon, whose work as an instructor has been satisfactory. 2. Comparative Anatomy has been taken by six students whose work has in all cases been good, and in some instances of a high character. Some of the results of the studies will soon be published. 3 and 4. During the spring term courses were conducted in Histology and Embryology, each course consisting of a lecture and accompanying laboratory work. Four elected the embryological work (one other taking the lectures), and seven the work in Histology. In the embryological course the lectures were almost entirely upon the Vertebrates, and the laboratory work was devoted to the Batrachia as a type. In the histological course the attempt was made to prepare the students for better work in the Medical School. 5. Another course of Histology, consisting of a lecture a week through the year, was given at the Medical School and was taken by the first-year class and electives from other classes, a total of about forty. Owing to the lack of adequate facilities for laboratory work at the Medical School, the demonstrations and practice work were given twice a week for the spring term in the Barnum Museum. Those, which were elective, were attended by fifteen. 6. On Thursday evenings of the first term, a public course of lectures was given

upon the "History of Zoölogy," which were intended to trace, step by step, the growth of our knowledge of the animal kingdom, and to outline the various speculations and theories which have been advanced to account for existing conditions. This course which was free to all, and which did not count toward a degree, had an average attendance of about twenty to twenty-five, a large proportion being Divinity students. 7. The two Fellows in Biology, Mr. Kenyon and Mr. Simmons, have worked at general biology and at special problems. Mr. Kenyon, who has been reappointed for another year, has not completed his investigations. He has, however, prepared a hand-book on microscopical technique which, it is hoped, will be published soon. Mr. Simmons has completed his studies upon the development of the respiratory organs of the spider, and these have been published as No. 2 of the Tufts College Studies. This paper conclusively shows that the respiratory organs of spiders are fundamentally different from those of the true insects and that they must be derived from gills, nearly like those of the horse-shoe crab. Mr. Simmons does not return next year, having been appointed Instructor in Cryptogamic Botany, in the Shaw School of Botany, of Washington University, at St. Louis.

The advanced students of this department have maintained a Journal Club, which has met on alternate Friday evenings during this year. This was devoted to the discussion of articles appearing in the recent Biological Journals; and from the uniformly full attendance, it is reasonably certain that the students derived enjoyment and benefit from the organization. Besides this, Professor E. L. Mark most kindly invited some of the students to attend regularly the meetings of the Harvard Zoölogical Club, an institution similar to our Journal Club. This we must esteem an act of courtesy which deserves the warmest thanks, for it practically gave us the advantages of the readings and discussion of the zoölogists of our sister institution.

TUFTS COLLEGE STUDIES. — The setting aside of a part of the income of the Olmstead fund for the publication of the investigations carried on in the Barnum Museum has allowed us already to issue two numbers of the “Tufts College Studies,” one of which has already been referred to. The first number contained Mr. Arnold’s paper on the nerves of the Surinam toad, and Miss Platt’s preliminary account of the ectodermic origin of the cartilages of the head, which were referred to as having been completed in a former report. The third paper in the same number was by the Professor, and outlined the conclusions to which he had come concerning the classification of the Arthropods. A third number, now in press, will contain an article by Mr. Leighton, of the class of ’94, in which he traces the history and fate of a fourth finger in the bird’s wings, and compares these fingers to those of the five-fingered hand. By issuing these papers in two journals we have not only given them a much wider distribution but we have very materially diminished the cost of publication.

The Studies have been distributed to the prominent learned societies and the larger universities and colleges, both at home and abroad. By a continuation of this course we may hope to increase very materially our library in one of its most important aspects; and, already, in return for the first number of the “Studies” over sixty institutions send us their publications regularly. The issuance of more numbers will doubtless greatly increase the list.

The departmental library established over a year ago has shown a steady growth, the total additions for the year numbering four hundred and fifty-two, of which eighty-two are volumes and three hundred and seventy, pamphlets and parts of volumes. These have come from the following sources: —

Essex Institute.	150
Department of Agriculture	33
Exchanges for “Studies”	79

Prof. J. P. Marshall	8
Arthur F. Gray	7
Peabody Academy of Science	4
J. S. Kingsley	56
R. W. Shufeldt	1
F. C. Kenyon	1
Purchase	113

After binding various periodicals the library now contains seven hundred and twenty-five volumes and eleven hundred and thirty-two pamphlets and parts. Notwithstanding this favorable showing the greatest need of the department is in the library, for if we are to continue as a productive institution we must have ready access to the world's work. Several of the most important magazines are lacking from our shelves and can only be obtained by purchase.

The laboratories and their equipment remain much as last year. From present appearances it will be impossible to move into the addition to the Barnum Museum until late in the fall. When we are in the new building we shall have laboratories as well adapted for their purposes as those of any institution in the country. There will be a large laboratory for beginners, a smaller one for advanced workers, a library, a work room, a private study and ample storage room, all of which are much needed at present.

Modern Languages.—The Wade Professor of Modern Languages has given instruction (three hours a week each) to seven classes, of which six continued through the college year. Of these five were in German, one was in advanced French, and one in Italian.

The total number receiving instruction in these classes was one hundred and one, of whom twenty-one were in more than one class, making eighty students in the College under the instruction of the professor. German was chosen as a major subject by six Sophomores.

The work in German during the year covered a wider range than ever before from the elements of the language to the study of the literature upon a higher plane than has been possible hitherto. German IV. was composed of a very few students who had entered upon the new course, without Greek but with German in its place. During this, their second year, they were able to perform work considerably beyond any ever offered by candidates for the degree of Master of Arts. An extended work on the history of German Literature (*Vilmar, Geschichte der deutschen National-Literatur*, large 8vo, 568 pages) was read in the first term. The two students who continued through the year made in the second term a detailed study of Klopstock, Wieland, Herder, and Lessing, reading largely outside of the class-room the most important works of each of these authors to the amount of some thousands of pages. The fact that our courses as already laid out provide for the continuance of this study yet farther, suggests the increase of the demands of German alone upon the professor in the future, and that the time seems to have come to make it a department by itself. Furthermore if the advanced work is to be done without too complete dependence upon libraries in Boston, our own library should be considerably enriched in its modern language department.

In general the work under the immediate charge of the professor has been characterized by no other features worthy of special mention. Appended is a schedule of the classes instructed showing their composition and the amount of work performed.

APPENDIX TO REPORT OF WADE PROFESSOR OF MODERN LANGUAGES.

CLASSES.	COMPOSITION.	WORK PERFORMED.
GERMAN I, b.	8 Jun., 18 Soph., 13 Fresh., 2 Spec., 4 Theol.=45.	Joynes-Meissner Grammar, Part I. Super's Andersen's Märchen, 120 pp.
GERMAN I, a.	1 Sen., 1 Jun., 1 Soph., 13 Fresh., =16.	Riehl, Burg Neideck, Heine, Die Harzreise Freytag, Aus dem Staat Friedrichs des Grossen. Buchheim's Elementary Prose Composition, once a week in 2d half-year.
GERMAN II.	4 Sen., 2 Jun., 7 Soph., 2 Fresh., =15.	Lessing, Minna von Barnhelm; Goethe, Hermann und Dorothea, with Sybel's Erhebung Europas as collateral reading; Schiller, Maria Stuart; Goethe's Iphigenie auf Tauris.
GERMAN III.	1 Sen., 2 Soph., 7 Fresh.,=10.	Schiller, Wallenstein, with forty pages of Muller's Geschichte des deutschen Volkes as collateral class-work. Goethe, Egmont, 3 acts read in class.
GERMAN IV.	3 Soph., 1st half-year. 2 Soph., 2d half-year.	Vilmar, Geschichte der d. National-Literatur (entire). Study of the life and works of Klopstock, Wieland, Herder, and Lessing.
FRENCH IV.	1 Sen., 8 Soph., 2 Fresh.,=11.	Crane's La Société Française au xvii ^e Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Crane's Le Romantisme Français; Voltaire, Merope, Zaïre; A study of Lamartine.
ITALIAN (1st half-year only).	1 Sen.	Grandgent's Grammar; De Amicis, Spagna, 100 pages; Maffei, Merope; Dante, L'Inferno.

The instructor in French had charge of the regular courses 1, 2, and 4, and conducted some additional work of which mention will be made in its place. The work of French 1*b* was very nearly that of French 1 of the catalogue, — elementary work in grammar and composition, with reading of prose works. The division consisted of twelve students from various departments and classes. The books used were the following: Edgren's Grammar, Super's Reader, Muller's "Les Grandes Découvertes Modernes," Souvestre's "Le Mari de Madame de Solange," and the Mellé volume of Selections from Contemporary Writers.

French 1*a* consisted of fifteen students, chiefly Freshmen in the A. B. course. Their elementary work had been done in the preparatory school. The reading of the year was supplemented by exercises in syntax, both oral and written, and by a review of the elementary work in grammar. The books used were: Edgren's Grammar with supplementary exercises, Van Daell's Introduction to the French Language, "Le Mari de Madame de Solange," Legouv   and Labiche's "La Cigale chez les Fourmis," Warren's volume of Selections from Victor Hugo, Delavigne's "Louis XI.," and for reading outside the class room, Daudet's "Pierre et Camille" and Erckmann-Chatr  an's "Waterloo."

The class in French 2 consisted, at the beginning of the year, of about thirty students. After Sandeau's "Mlle. de la Seigli  re" had been read, a division of the class was made, and French 2*a* read the following works: Super's Readings from French History, Corneille's "Polyeucte," Racine's "Andromaque" and "Mithridate," Moli  re's "L'Avare" and "Le Misanthrope," Boileau's "Le Lutrin," and Hugo's "Ruy Blas"; also, outside of the class-room, Racine's "Esther," and selections from the "M  moires de Saint-Simon." French 2*b* read the following: Hal  vy's "L'Abb   Constantin," Racine's "Esther" and "Ph  dre," Corneille's "Horace," Moli  re's "Le Bourgeois Gentilhomme" and "L'Avare." In both divis-

ions of French 2 the principles of syntax were reviewed by the use of "Chardenal's Exercises for Advanced Students."

Instead of the regular work of French 4, a course in composition was given to two students of French 3 of the previous year; and a third student did a term's work in literature of the sixteenth and seventeenth centuries, with especial attention to the writings of Montaigne. In the second term an extra course in composition was given to six students, Sophomores and Juniors, the text-books used being Chardenal's Advanced Exercises and Storr's "Hints on Syntax." Edgren's Grammar was used for reference.

The assistant in French conducted the work of three divisions of students of the Engineering Department, chiefly Freshmen and Sophomores.

The courses were parallel with French 1 and 2, as detailed above, except that the works read were fewer in number and exclusively prose. In each of these divisions selections were read from a treatise on some scientific subject.

Attention is called to the revised statement of French courses which appears in the catalogue for 1894-95.

History. — As in the preceding year the subjects given were arranged in certain cases temporarily to cross the line between the old curriculum of the College and the new.

Four subjects were given. History 1 was a general introductory course, three hours a week for the year. Sheldon's Outlines of General History was used, with Lavisse's Political History of Europe. The instruction was by means of lectures, recitations, and topical work by the class. Each member of the class submitted a thesis on some special topic. Twenty-three students, of whom twenty were Sophomores and three Specials, were enrolled in this class.

In History 2, studying the Modern History of Europe and American Colonial History, three hours a week for the year,

twelve Juniors, one Sophomore, and one Freshman were enrolled. No text-book was used, the work being by reference reading, study of special topics, and lectures. A considerable amount of written work, subject to criticism by the class and by the instructor, was done, and each member of the class submitted a thesis on a special topic.

Four Seniors engaged in the study of the Political and Constitutional History of the United States (History 5), three hours a week for the year. For text-books the series of Epochs of American History were used, but extensive reading was done in the standard works on American History, with constant reference to the sources from which our history is drawn. In this course a special aim is to encourage just and independent thought on all questions affecting our national life.

Two Seniors engaged in the "Seminary" work of History 9, which consists of independent research with historical sources by the students, under the guidance of the instructor. One of these, William Henry Goodrich, died during the year. His work in this department had been of the highest character, and would probably have secured him a place in the honor list at his graduation. His associate did a large amount of work, studying the various phases of the life of the Colony of Plymouth from the first settlement to the union with Massachusetts Bay. The manuscript of his work, treating of the social, civil, religious, and military arrangements of the people of Plymouth, is in the hands of the instructor, and it is hoped that it may soon appear as one of the publications of Tufts College. Mr. Goodrich was engaged at the time of his death on a parallel study of Massachusetts Bay for the same period.

Mr. Benton received final honors in History, and honorable mention was accorded to Charles Crawford Stroud of the Senior class for two years' work in the department.

A comparison of this statement, with the report of the preceding year, will show the development in two years in the

amount and scope of the work done in this department. It has taken rank already with the older and better organized departments, because of its natural importance as a branch of knowledge and a necessary factor in a complete education. Work in the department, it should be said, is now wholly elective.

In view of these facts it seems proper to emphasize and enlarge upon certain suggestions made last year. The department of History needs substantial recognition in the way of equipment to properly carry on this work that is growing on its hands, and is now carried on with great difficulty for want of facilities. The need of equipment for the departments of natural and physical science is always recognized. It does not seem to be so generally understood that an instructor in history finds his work about as difficult and unsatisfactory without equipment as would a chemist without a laboratory. It seems almost unnecessary to say that books must be constantly purchased and good library facilities be afforded for the historical student. No one book can teach history adequately. No one man can teach students history unless they have means for independent study. The instructor realizes the pressing character of the demands upon the library funds, and his hope is that some friend of the College who understands the value and the needs of true historical study will provide means to increase annually the collection of historical works in the library, now so inadequate to our growing needs.

A lecture room, well lighted and ventilated, capable of seating comfortably at least one hundred students, and equipped with wall maps and other illustrative material, is an imperative necessity of this department, and would be a great convenience to others. For the current year the instructor is obliged to give a lecture course in the Chapel, so large is the class; and the Chapel, beautiful and appropriate as it is for religious purposes, is not adapted either to lecturing or note-taking. The instructor urges that some measures be taken to provide such

a lecture room in Ballou Hall, where more space is soon to be available and where several plans of re-arrangement are possible.

The next need to which attention is called is of a room for the smaller classes, to be equipped for historical study, not a bare school-room, where little can be done beyond lecturing or hearing a recitation. This room need not be large, nor need its fittings be expensive. It should have book-cases, filing case, an abundance of drawers, tables, etc., and should be supplied with reference books, a small working library, and the leading historical periodicals and newspapers. Such work could then be done as the department ought to do; such work as the chemist can do in his laboratory.

Oratory. — The elementary work in Oratory was taken by thirty-seven students, each of whom, in addition to class reading and drill, prepared recitations and delivered them before his fellows. One of the sections into which it was necessary to divide the class studied the “Merchant of Venice,” the other used standard selections of poetry and prose. The elective class of eleven, in the first term, was increased to nineteen in the second term by the opportunity to choose practice in either dramatic recitation or debate or topics of local and national interest.

In the Divinity School eight members of the Junior Class finished in the first term their required work. An elective class, of eight in the first term and ten in the second term, made a feature of extemporaneous speaking. In the second term the entering class read secular and Biblical selections, and had exercises in voice and gesture for two hours a week. One of the elective divisions in the College gave a public presentation of the trial scene from the “Merchant of Venice,” and on May 29 the annual Goddard readings occurred in the Chapel.

English Literature. — The work in English Literature may be briefly sketched as follows: during the first term nineteen students read a number of the "Canterbury Tales," some in class and some privately, and presented each an essay embodying the results of private study of some part of Chaucer's writings. Lectures were given upon the course of English literature, from its beginning until Chaucer's time. The class in American literature was composed of thirty students, who traced, by means of lectures, frequent written discussions, and copious reading, the course of our own literature, from the beginning of the seventeenth to the latter part of the present century. A special class consisted of seven Engineers, making this their optional study, who read selected nineteenth-century authors. Three persons elected to study the history of the English language. During the second term, thirty-seven students of Shakespeare read rapidly twenty-six of the plays, examined the sonnets, and made special study of "Hamlet," each member of the class presenting in writing a personal study of a single play. The romantic movement was followed by twenty-one students, who studied some of the more prominent authors in class, and made individual estimates of other writers of the period. Eight students read selected fiction illustrating the development of the novel, at the same time noting and discussing the several phases assumed by this form of literature.

The increasing interest displayed in the study of English literature urges the need of setting free the time which the instructor in this department is obliged to spend upon Oratory. Nearly all the subjects in English literature now announced in the catalogue must be rotated from year to year, in order that they may be even occasionally presented. Thus the literature of the United States is offered for a single term once in two years, instead of filling, as it should, both terms of every year. Moreover, new fields open in several inviting directions. Anglo-Saxon and Middle English, the science of

English versification, the exhaustive study of a single author or of a single period, the investigation of both the history and the principles of literary criticism, cannot be adequately treated, if at all, so long as one teacher must give a large share of his energy to another subject. The field of English literature is so vast as to demand undivided application as the condition of creditable educational result.

English and Philosophy.—Instruction was given by Professor Shipman as follows:—

A. — ENGLISH.

(Subjects as in Catalogue, pp. 36, 37.)

1. *a.* Classical course students, Freshmen. One hour a week for the year. Maximum number in class, forty. About twenty-five compositions required, besides other papers. Three fourths of the compositions written in class-room.

b. Engineering course students, Freshmen. Compositions one hour a week for the year. Lectures with notes and examinations, one hour a week first term. Maximum number in class, fifty-two. Papers required, about the same as above (*a*).

2. *a.* Classical course students, Sophomores. Three hours a week for first half-year. Maximum number in class, twenty-eight. Text-book, Genung's Outlines of Rhetoric. Formal compositions not required, but written exercises in connection with text-book.

b. Engineering course students, Sophomores. Same as above (*a*). Maximum number in class, fifteen.

3. *a.* Essays. Three program hours a week. Requirement usually met by one essay a week. Maximum number in class, fifteen; most of them Juniors. First term. (This subject took the place of that which is described as 4 in Catalogue of 1893-94).

b. Essays. Two program hours a week. Requirement

usually met by one essay a week. Maximum number in class, twenty; most of them Sophomores. Second term.

5. Daily composition. Three program hours a week. Requirement, about seventy-five papers in all. Maximum number in class, ten; most of them Sophomores. Second term.

6. Principles of Style. Three program hours a week. Much reading by students, under direction, but not the same for all. In class time given mostly to discussion by students and instructor. Number in class, five; most of them Juniors.

All papers written in 1 *a* and *b* in 3, *a* and *b*, and in 5 were carefully read by the instructor. Revision not uniform; sometimes by instructor, sometimes by writer, sometimes not required. In subject 3 *a*, many papers were read in class. Generally in subject 3 *b*, papers were returned in personal interviews with discussion by instructor. The entire work of the year called for the reading of probably eight thousand pages of manuscript, the greater part of it written with pencil.

B. — PHILOSOPHY.

(Subjects as in Catalogue, p. 47.)

2. Psychology. Text-book, Davis', with supplementary reading. Three hours a week for second term. Number in class, twelve; nearly all of them Juniors.

3. Logic. Text-book, Minto's, with practical exercises. Three hours a week for first half-year. Number in class, thirteen; Seniors and Juniors.

4. Two Seniors, three hours a week for second half-year, read, for the most part, independently, — one a number of treatises or parts of treatises on logic, the other a selection of works constituting an introduction to philosophy, a substitution in part of 7 for 4.

The Library. — The accessions to the library for the year have been thirteen hundred and seventy-seven volumes, nineteen hundred and twenty-eight pamphlets, and twenty-one hundred

and eighty-five periodicals. Twenty-two volumes of duplicates were returned to the Department of the Interior. The net gain is thirteen hundred and fifty-five volumes. Of the donations received two hundred and sixty-three volumes were duplicates. Mrs. Briggs's gift was the largest donation, numbering five hundred and sixty-two volumes, from the library of her late husband, the Rev. L. L. Briggs.

Much valuable matter counted among the pamphlets has been received the past year in exchange for Tufts College Studies, part of which is retained in the general library, the remainder going to the Barnum Museum.

Mr. Sewall spent two months in the library devoting himself mostly to reference work, arranging exchanges with libraries, and exchanges for Tufts College Studies, and trying to complete our files of government publications. There is a slight increase in the circulation, but the use of books in the library of which no account is kept, is increasing every year, due to the fact that so many books are retained in the library for reference while class work is in progress.

The library has been open for the last two years, two evenings each week, but the attendance has hardly been sufficient to warrant the risk and care. The use of kerosene lamps renders the practice dangerous. It is therefore recommended that the evening opening be discontinued until we can have electric light.

Political Science. — The President gave instruction nine hours a week throughout the college year. Political economy covered the entire period; and the class, composed of thirty-one students, embracing the regular Seniors, a number from the Divinity School, and a small number of men making political science their major subject, met three times a week. The text-book used was Marshall's. This work was studied very thoroughly. Problems were also assigned for the members of the

class to investigate and solve. A large number of lectures and demonstrations were given on topics not treated in the text. After the years 1894-95, Political Economy will be required of all engineering students, and elective for candidates for the other degrees. This will increase the size of the classes so that the proper handling of them by the President in connection with his other duties will be almost impracticable. Six students, mostly Seniors, elected Ethics three hours a week for the year. An attempt was made to treat the subject in part historically, and students were sent to the library for study in special lines. During a brief absence of the President, owing to ill health, Professor Tousey gave the class a very acceptable course. A class of ten elected and pursued the subject of Ancient Law three hours a week for the first term. Sir Henry Sumner Maine's work was used as a text-book, but a large part of the instruction given is by expository lectures. The class was made up about half and half of Seniors and Juniors. The same class with one additional member studied International Law for the second term. The text-book used was a new work by T. A. Walker. Mr. Walker is a pupil of Maine, and has applied most successfully the historical method to the treatment of international law. The class manifested great interest in the subject.

The College Pulpit. — In addition to the above, the preaching services were in charge of the President, and the pulpit was occupied by him, as usual, nearly every Sunday. In connection with all the other duties of the office, which are now multiplying from year to year, the burden is becoming excessive. Indeed, the duty of college preacher is enough of itself to command the entire time and energy of a man of the highest intellectual and spiritual equipment. It is clear also that the religious interests of the College cannot be secured in the highest degree by the existing method. An effort should be made to introduce more variety into the services. This seems to be

almost indispensable if we would secure on the part of the students a deep and abiding interest in the ministrations of the chapel. There is a strong demand to hear different representative men; and it would be well if a plan could be devised that would bring in from the outside some fresh intellectual and moral force that would quicken thought on the highest themes and stimulate the spiritual life of the College.

I call attention to the reports of the professional and other specific departments of the College. The reports are increased this year by the reports of the Bromfield-Pearson School and the Medical School. The creation of these instrumentalities of education has considerably increased the labor and care of supervision.

E. H. CAPEN.

TUFTS COLLEGE, Sept. 20, 1894.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President :

The Divinity School of Tufts College has been in existence a quarter of a century. Those most actively interested in its history and welfare silently celebrated its twenty-fifth anniversary in August of the present year, and found it good to count up into result the work done. The School began with two professors and three students. At first a small room with one window and scanty facilities, in what is now known as Ballou Hall, was all the home that could be afforded it. As the School grew in numbers it was assigned apartments in West Hall, the lower suite of rooms being used for recitations and lectures, and the rooms on the second and third floors for dormitories. To-day the Divinity School has on its Faculty, including the venerable Professor (Emeritus) of Christian Theology, nine resident professors and three non-resident lecturers. During the college year covered by this report, forty students were on the roll of membership.

As the years have gone on the work of the School has widened, its facilities have been generously multiplied and improved, its methods have conformed more and more to the demand of the new learning, and its spirit, we believe, has grown increasingly religious, in a wholesome piety and in a catholic recognition of the claims of humanity.

At the beginning of the year, 1893-94, fourteen students entered, two Juniors, eleven Sub-Juniors, and one Special. Of the Senior class ten were graduated, and are now settled over parishes, — four in Massachusetts, three in New Hampshire, one in Maine, one in Vermont, and one in Connecticut.

Very little needs to be said in this report of changes in the courses of study or the methods of instruction and general management. The one thing, perhaps, that marks progress in

the conduct of the School, is the emphasis that it gives to the *principles* of theological study, and the human and historical interest which characterizes all its work. More and more, also, the School keeps in mind the ulterior aim, namely, personal life, and the highest form of human welfare. The great question with the teachers is: How can the subjects with which they deal be made operative in human life, and how, by the help of theological learning, can the world be led on in truth and goodness?

The Faculty of the Divinity School gratefully acknowledges the wise and generous supervision of the College, and gladly finds its own aims and endeavors sanctioned by the action of the Trustees in increasing the teaching force of the School, and in providing the instruments which the growing work of the theological department requires. In all our work we have been cheered by the intelligent interest of our Alumni, and by the faithful suggestions of the clergy at large. What we have called College Extension Work enlarges year by year; and the School desires more and more to put itself in correspondence with the life of the churches, both for the sake of an efficient administration of religion and a religious organism, at once compact and facile.

The one need of the School, which this report ought anew to accentuate, is the need of books of reference for the current work of the different departments, and for that independent research which modern theological study favors. This report may close, therefore, with words before used. Efficiency in the work of the Divinity School would be promoted to a degree hardly to be realized by persons remote from its duties, if the professors, within the limits of a defined appropriation of funds, could be permitted to order books from time to time as they appear from the foreign or the domestic press.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE, Oct. 1, 1894.

THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President :

In conformity with the requirements of the College, I herewith submit the first annual report of this department.

It is with an uncommon degree of pleasure that this report is given, because it is the first report of the Medical School, and because of the unprecedented success attendant upon its organization, and the work of the year. However much of fear and misgiving were felt lest the venture of establishing a Medical School should not be successful, they have all vanished. The earnest work of a devoted Faculty has solved the problems presented.

The desire to establish a Medical School in connection with Tufts College was not new, but the way was not opened, or it was not deemed wise to make the effort until the present Faculty, who had had years of experience in teaching and governing a Medical School, were at liberty to take up the enterprise and make it a success. The arrangements were perfected in the summer of 1893.

A Faculty was organized consisting of

ALBERT NOTT, M. D., DEAN,
Professor of Physiology and Hygiene.

CHARLES P. THAYER, M. D., SECRETARY,
Professor of General Descriptive and Surgical Anatomy.

JOHN W. JOHNSON, M. D., TREASURER,
Professor of Obstetrics and Gynecology.

HENRY W. DUDLEY, M. D.,
Professor of Pathology.

WILLIAM R. CHIPMAN, A. B., M. D.,

Professor of the Principles and Practice of Surgery and Operative Surgery.

WALTER L. HALL, M. D.,

Professor of the Principles and Practice of Medicine and Clinical Medicine.

FRANK G. WHEATLEY, A. M., M. D.,

Professor of Materia Medica and Therapeutics.

Seven men, teaching the seven fundamental branches of Medicine, together with a large corps of Instructors and Lecturers, laid the foundations and carried forward the work. Rarely in the history of the organization and development of a Medical School, have such gratifying results been accomplished with so little friction. Starting with nothing but the record of the past achievements of its Faculty, a location was secured, and a singular and pleasant fact relative to the location was, that it was secured in Boston in a building owned by Tufts College. The School will hereafter probably always be held in a building belonging to the College.

The School opened with eighty students, of whom twenty-two were in the graduating class. It is well equipped, the bills are all paid, and there is money in the treasury, — all this from the proceeds of the School, without calling on the College for pecuniary aid in any way.

The eighty matriculants represent eight different States, but most of them were from Massachusetts. Of this number twenty-three were women and fifty-seven men. The number in attendance during the year was sixty-six — twenty women and forty-six men. The Freshman class numbered twenty-eight, — seven women and twenty-one men. The Middle class numbered fourteen, — four women and ten men. The Senior class numbered twenty-four, — nine women and fifteen men. All of the Senior class that came up for graduation were successful

in passing their final examinations. Four applied for admission to the Massachusetts Medical Society, and were successful in meeting the examination tests for entrance.

The attendance during the year has been good. The Junior and Middle classes have manifested a zeal and earnestness that indicate future success. During the year the Faculty has been enlarged so as to include the chairs of Medical Chemistry, General Chemistry, Ophthalmology and Otology, Neurology, Gynæcology, Clinical Medicine, and Diseases of Children; the number was thus increased from seven to fourteen. The original Faculty of seven has been made an Executive Board, to have the exclusive financial management of the School.

The clinical advantages of the School are not yet all that could be desired, but they are constantly improving.

Since arrangements were perfected for the opening of the term, Dr. Herbert L. Smith has been nominated as Professor of Clinical Surgery. Dr. Smith is of the staff of the City Hospital and will avail himself of the material of that institution for instruction. Dr. Williams, who fills the chair of Diseases of Children, has, also, an important clinic in the Boston Dispensary. Dr. Webber, in Neurology, and Dr. Hildreth, in Clinical Medicine, will make use of the Suffolk Dispensary. Dr. Tenney, in Ophthalmology and Otology, has also a large clinic at the Suffolk Dispensary. Dr. Cushing, the Professor of Gynæcology, has a private hospital near the Charity Club Hospital, which will be used as far as possible. So that while the clinical advantages are not all we could wish, yet they give the student an opportunity to come in contact with much that will enter into his future life work.

In looking over the history of the School during the year, it is pleasant to note the formation of an Alumni Association by the graduating class, an Alpha Delta Society by the women, and an Alpha Kappa Kappa Society by the men; the two latter societies are for the purpose of encouraging medical improve-

ment, and more firmly cementing the social ties that ought to be cultivated among students.

The school year has been increased from seven months to eight, so as to accord more nearly with the college year, and give the student more time for work in the various departments.

The present quarters, No. 188 Boylston St., have been secured for two years, with an additional story, so that now there will be three stories for the exclusive use of the school. This change has rendered it necessary to move the chemical laboratory and dissecting room to the upper story, where there is more room and better light; it also gives an additional lecture room, thus increasing our facilities for teaching.

Already a Medical Museum of pathological and morbid specimens has been started, and it is much to be desired that the Faculty, Alumni, and friends of the School will send such specimens as may be available from time to time, to the secretary. They will be thankfully received and properly cared for.

There have been received during the year a large number of pamphlets and magazines, which suggest the possibility of a library; this, in connection with the Medical School, will, no doubt, in time be secured and become a very useful adjunct.

In closing this report there are two things I would especially emphasize. First, owing to the fact that there is so much embodied in a medical education, and such a demand for clinical work, the School must look to the extension of its course from three years to four years. The first three years should be given mainly to didactic work, laying the foundations deep and firm in the theory of medicine. The fourth year should be given mainly to clinical work. This, we believe, will give the student a much better medical education and fit him better for the responsibilities of his profession. In the second place we must remember that the present quarters will not be adequate for the needs of

the School after two years. It will imperatively need a new building with larger and better accommodations.

There has been the utmost harmony in all the departments during the year, and with the increased facilities we approach the labors of another year, and confidently believe that Tufts College Medical School has entered upon a career that is destined to place it second to none in the country.

Respectfully submitted,

ALBERT NOTT,

Dean.

Boston, Sept. 20, 1894.

THE BROMFIELD-PEARSON SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

*To the Committee of the Bromfield-Pearson School, President
Capen, Chairman :*

The new Technical and Preparatory department, known as the Bromfield-Pearson School, was opened Oct. 5, 1893, with fourteen students. At this time the interior finish of the building was but partially completed, none of the upper floors were laid, and much of the plastering had not been done. Despite the inconveniences arising from these circumstances, the regular work of the School was begun on the Monday following Oct. 9, and from that time there was no interruption in the class work.

Just previous to the opening of the School it was deemed expedient to substitute for the advertised Manual Training course, a special preparatory course of one year; thereby simplifying the administration, decreasing the annual expenses, and at the same time opening up a unique and important field in preparatory work.

The present function of the Bromfield-Pearson School is threefold: *First.* That of providing a one-year preparatory course for the Engineering Department of the College. *Second.* A two-years course of technical instruction for those who may be unprepared to enter College, and whose time may be so limited as to otherwise induce them to take a partial Engineering course, unprofitable both to them and to the College. The first year of this course is nearly identical with that of the Preparatory Department. *Third.* The instruction in Drawing

and Shop Work to all members of the Engineering department of the College.

The character of the Preparatory Course is as follows: it is the intention now to admit only such students as may have attained sufficient maturity of mind to enable them to accomplish the specified work in the limited time. The curriculum is such that students may pursue, during this year, all the Mathematics required at a high school, and necessary to enter college, besides preparatory work in English and French. While this may seem excessive it has been successfully completed by students during the past year. The synopsis of studies is as follows: Academic Algebra, Plane and Solid Geometry, English, and French. These are pursued to the extent necessary to pass the entrance examinations to Tufts College. If the student is already fully or partially prepared in any of these subjects he may elect any of the following: Plane Trigonometry, Elementary Mechanics, Freehand or Mechanical Drawing, and Shop Work. This makes it possible for advanced students to pursue some of the Freshman studies while preparing for College, and thus shorten the Engineering course.

The second function of the School is that of providing a special technical course which serves to train those who are debarred from entering the College by reason of incomplete preparation and limited time. Moreover, it is constantly being demonstrated that such students, by means of this training, are taught to appreciate the value of such an eminently practical course, and are frequently diverted from the narrow channel of a limited special field into the broader one of the Engineering department. The two-years special course is so planned that students who shall have pursued that of the first year in a creditable manner may change to the College course without material loss of time. Indeed, it is possible to do this during the second year, since some of the studies are

taken in connection with college classes. I believe this department of preparatory work to be one that will serve, not only the higher end of enabling many worthy students to obtain some of the benefits of a technical education, but will also tend to increase the number of desirable students in the College, inasmuch as such a course will appeal most strongly to those who have come to an appreciation of the real value of education. The relation existing between the Engineering department of the College and the Bromfield-Pearson School is necessarily very close. They have the same instructors; many of the studies are pursued in common, and the shops of the school are the shops of the College. During the past year eighty-one students of the College have pursued the course in drawing at the Bromfield-Pearson building; and the number who have taken one or more of the shop courses, is sixty-four. The carpenter shop was opened Feb. 12, 1894, at which time the equipment, although incomplete, was sufficient to enable the classes to begin work. The forge shop could not be opened until the engine was put in operation, March 17, after which the classes met regularly until the close of the college year.

The equipment of the school, while yet small and incomplete, is one that we may be justly proud of. It is such as to supply not only the necessary machines for the manipulation of material, but good examples of the best workmanship, and tools well adapted for educational purposes. There are eighteen benches fitted with vises, drawers, and the tools necessary for carpentry and pattern-making; eleven benches for use in machine shop; eighteen pattern-makers' bench lathes, together with the necessary centres, chucks, and tools. The lathes are mounted on long benches fitted with drawers for the accommodation of tools. There are two emery grinders with an assortment of emery wheels, and a circular saw of improved type, with adjustable table. The equipment of the forge shop consists of sixteen Sturtevant forges with blower and exhaust fan,

together with the requisite pipe connections; seventeen anvils with tools such as are required for the course in forging. The power for the shops is supplied by a thirty horse-power Buckeye engine, six and one-half inch drain by ten-inch stroke. In addition to this, there is the shafting, hangers, clutches, and belting required for its transmission. The erecting of the machinery and all of the woodwork for the above equipment has been done by our instructor in this department, Mr. Geo. H. Furbish. To him we are also indebted for much of the design of the fittings.

Thus far we have been supplied with the bare necessities of the outfit required for an institution of this grade; but the demands of the College are such as will make it necessary to immediately increase the number of tools. A hand saw and large pattern-maker's lathe will be required during the coming year. The machine shop will not be opened until the spring term, but there will then be required nine engine lathes, one drill press, a shaper, universal milling machine, extra benches for the chipping and filing, and the shafting necessary for the transmission of power. During the past summer Mr. Furbish has been employed in completing the outfit, which was unfinished last winter by reason of the haste incident to the opening of all the departments. The pattern shop is now complete and the forge shop nearly so. Moulding benches, together with the necessary flasks and tools, have been constructed for the advanced class in pattern making and moulding. It has been found necessary to supply the drafting rooms with additional tables, cases, and boards, to accommodate the increased number of students in the Engineering department. All of this work has been done at the building at an expense of material only. The upper story has been plastered and a new floor laid, to make it available for the Freshman class of Engineers.

In reviewing the year's work of the School it is proper to

consider the difficulties under which instructors and students have labored. It should also be observed that the organization of the Bromfield-Pearson School has not been simply that of a new department of the College, but rather a new departure in preparatory and technical education. The character of the work of the students will, however, best testify to the value of the system, and this has been very gratifying during the past year.

In behalf of the Institution I desire to express the obligations due the Trustee of the Pearson estate, Rev. A. A. Miner, D. D., for the valuable services rendered, and especially for his prompt and generous response to the demands for an immediate equipment of the shops, which made possible the organizing of classes in this department during the past year.

Respectfully submitted,

GARDNER C. ANTHONY, DEAN.

SEPT. 20, 1894.

THE BARNUM MUSEUM.

THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President :

The most important matter to be reported during the year is the extension of the Barnum Museum building by the erection of the west wing. This is now approaching completion, and when it is finished it will afford us much needed room for exhibition and class purposes.

This addition erected in the same style as the main building is 48 x 54 feet in ground area and is practically three stories high. The ground floor contains the following rooms, all of which are well adapted for their purposes: a laboratory for graduate students; a laboratory for advanced undergraduate students; two storerooms, one of which is intended for alcoholic collections, and a work shop for the janitor. On the first floor is the large laboratory for the classes in elementary biology, a study for the professor in charge, a library room which will accommodate about five thousand volumes, and lavatories, stock rooms, etc. The second floor is finished as one large room for exhibition purposes, and as growth demands this can be provided readily with a gallery.

In this addition the attempt has been made to correct the faults of the main building. The lighting of the laboratories has been carefully studied and the work of construction has been done in the most thorough manner.

In view of the early completion of this wing but few changes have been attempted in the main museum hall. It is proposed to devote the new hall to the display of the geological, mineralogical, and anthropological collections, and the cases for this

purpose will be copied from the most approved cases in other museums. When these collections are removed from the old exhibition hall it will permit a rearrangement of the zoölogical collections. The gallery will be devoted to the Invertebrates, Fishes, and Reptiles, while the main floor will be occupied by our already fine exhibit of Birds and Mammals. It is intended to place cases around the gallery rail for the display of Mollusks and Insects, none of which are now on exhibition.

A noteworthy change in the administration of the museum is the employment of a carpenter for janitor. In this way we are enabled to build our cases and other furniture at the minimum of expense to the College.

The addition to the collections during the year are as follows: —

From President Capen, fine specimens of Stalactites and Corals collected during his recent visit to the Bermudas.

From Charles H. Barrett, of Medford, the following well-mounted birds: Ring plover, *Ægialites semipalmatus*; grass snipe, *Actodromas maculata*, and green heron, *Butorides vivescens*.

An exchange of specimens has been arranged with the museum of Brown University whereby we are to receive a large number of skeletons, skulls, etc, now lacking in our collections and of extreme value for teaching purposes. From this exchange we have already received a number of specimens of Invertebrates from the American shores, as well as a considerable number of the beautifully prepared specimens sent out by the Naples Zoölogical Station. These latter have been mounted for exhibition in the most approved manner.

The condition of and additions to the department library have already been reported on by Prof. Kingsley.

A word may be added here as to the future policy of the museum. With the enormous collections of the Museum of Comparative Zoölogy and of the Boston Society of Natural His-

tory close by, it seems a waste of means and energy for us to attempt the collection of a rival museum. Our endeavors should lie in the direction of making our display a typical one, and our already high standard of excellence of specimens should be maintained. Our collection of mammals is very fine, of birds we have a good and characteristic display, but in other groups we are sadly deficient. Our attempt should be to raise the other departments to the level of the birds and mammals. In all our work we should constantly bear in mind the fact that the primary intention of our museum is the instruction of our students rather than the amusement of the sight-seeing public, and hence our endeavors should be to gather such a collection of preparations, all fully labeled, that each visit to the museum will be rewarded by the acquisition of some new fact or principle.

Respectfully submitted,

JOHN P. MARSHALL,

Director.

TUFTS COLLEGE, Sept. 20, 1894.

THE GODDARD GYMNASIUM.

REPORT OF THE GODDARD GYMNASIUM.

To the President :

The Director of the Goddard Gymnasium begs to submit the following report of the work in Physical Training during the past year : —

The work in Physical Training has been required of all first and second year men, and allowed to count one term hour towards their respective degrees. This arrangement has already secured the attendance of that class of students who, as beginners, get no pleasure out of physical movements, and, consequently, under the elective system, took no exercise at all, and more regular attendance of all students taking courses in Physical Training.

Before entering upon the work of Physical Training, a medical and physical examination has been required of the men. The object and conduct of this examination is set forth in last year's report. Dr. Woodbury has made the medical part of the examination, while the Director has taken the measurements, made strength tests, and looked after the records.

The first and second year men began work the middle of November. At the outset it became apparent that all the first year men could not be accommodated in the Gymnasium at once. Accordingly they were divided equally for general exercises. Each large division was then sub-divided into three smaller divisions for special work. The larger divisions were led by the Director, and each met three times a week. The work of the squads was attended to by the Director, Mr. Foss, and a class leader. The Sophomores were divided only for

special work, and into two divisions. Mr. Foss, assisted by a class leader, directed their work. The kind of work performed by the first and second year men has not differed much from the work which they did last year.

Under the oversight of Mrs. Capen and Mrs. Knight, a class of young women was organized and taught by the Director. Instruction aggregating twelve hours a week has been given at the Goddard Gymnasium.

Respectfully submitted,

FRANK W. DURKEE,

Director.

TUFTS COLLEGE, Sept. 20, 1894.

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ANNUAL REPORT

OF THE

PRESIDENT

OF

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

TUFTS COLLEGE

1894-95.



BOSTON:

ALFRED MUDGE & SON, PRINTERS.

NO. 24 FRANKLIN STREET.

1896.

ANNUAL REPORT
OF THE
PRESIDENT
OF
TUFTS COLLEGE
1894-95.



BOSTON:
ALFRED MUDGE & SON, PRINTERS.
No. 24 FRANKLIN STREET.
1896.

PRESIDENT'S REPORT.

1894-5.

To the Honorable and Reverend the Trustees of Tufts College :

GENTLEMEN : The President of the College has the honor to submit the following report for the academic year 1894-5, namely, from September 20, 1894, to September 19, 1895.

The Corporation has met with two serious losses during the year. The Rev. Clark Rice Moor died on the 27th of April, and the Rev. Alonzo Ames Miner, D.D., LL.D., entered into rest on the 14th of June. Mr. Moor was an active and valued member of the corporation. His interest in the College antedated by many years his election to the office of trustee. In his official capacity he was constant in his attendance upon the meetings of the Board and was pains-taking and intelligent in regard to all matters that came up for action. Whenever any special duty was assigned him, he performed it with fidelity. His work of a year ago as Chairman of the Board of Visitors to the Divinity School was especially thorough and valuable.

Dr. Miner's connection with Tufts College was so intimate and covered so long a period of time that it is impossible to think of the College without thinking of him, and *vice versa*. The history of the institution can never be written without giving an account of Dr. Miner's varied services to it almost from its inception to the present time. In like manner, the biography of Dr. Miner would be fatally deficient if the important particulars in which the College absorbed his thought, enlisted his energies, and commanded his affections were omitted. As soon

as the project for its establishment was fully broached, he took a most active and vital interest in it. It was his ardent advocacy that secured many large subscriptions from the members of his parish in Boston, and inspired confidence in the stability and progress of the undertaking, even beyond the limits of parish and denomination. He was instrumental also in a marked degree in securing from the Legislature of Massachusetts a large donation from the proceeds of the sale of the Back Bay Lands. On the death of Dr. Ballou, the first president of the College, in May, 1861, Dr. Miner was chosen to the presidency and filled the office with signal ability for twelve and a half years. His rare intellectual gifts became the symbol before the world of the ground and purpose of this new experiment in education. He did much to set the standard high and keep it so. As a teacher he made a strong and lasting impression on his pupils through his wonderful personality. When the time came, as he thought, for his resignation, the Trustees were reluctant to relinquish his services, and they did what they could to dissuade him from the step he felt called upon to take. But though his relation to the College changed at that time, his interest continued unabated to the hour of his death. He not only remained a member of the corporation, but was Chairman of the Executive Committee, serving also upon many important sub-committees. As the Trustee of funds to be devoted to educational purposes he kept the College constantly in mind and secured important facilities for it. Finally in his will he gave the crowning witness of his devotion, not only by confirming his bond for forty thousand dollars given to secure the erection of the Miner Theological Hall, but by making the College his residuary legatee.

The suggestion in my last annual report looking towards formal alumni representation upon the Board of Trustees has not yet received definite action. But a committee has been

appointed to consider the subject, and doubtless something will be done during the coming year to modify the constituent elements of this body.

The following permanent appointments have been made : —

HERBERT L. SMITH, M. D.,

Professor of Clinical Surgery.

THOMAS M. DURELL, M. D.,

Professor of Legal Medicine.

FREDERICK L. JACK, M. D.,

Professor of Otology.

WALTER CHANNING, M. D.,

Professor of Mental Diseases.

LEO R. LEWIS, A. M.,

Professor of the History and Theory of Music.

FRANK W. DURKEE, A. M.,

Assistant Professor of Chemistry.

The following re-appointments for one year have been made : —

FRANK E. SANBORN, S. B., *Instructor in Mechanical Engineering.*

EDWIN A. START, A. M., *Instructor in History.*

FRANK T. DANIELS, A. M. B., *Instructor in Civil Engineering.*

HORATIO MYRICK, A. M. B., *Walker Special Instructor and Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A. B., *Instructor in English.*

JOHN E. BUCHER, A. C., Ph. D., *Instructor in Organic Chemistry.*

FRANK B. BROWN, M. D., *Instructor in Bacteriology and Assistant in Pathology.*

WILLIAM P. DERBY, M. D., *Instructor in Gynæcology and Assistant in Obstetrics.*

CHARLES G. CUMSTON, M. D., *Instructor in Gynæcology and Assistant in Obstetrics.*

CHARLES ST. CLAIR WADE, A. M., *Instructor in French and Teacher in the Bromfield-Pearson School.*

FRANK G. WREN, A. B., *Instructor in Mathematics and Teacher in the Bromfield-Pearson School.*

W. R. WOODBURY, A. B., M. D., *Lecturer on Hygiene and Medical Director of the Gymnasium.*

ALBERT E. ROGERS, M. D., *Instructor in Materia Medica.*
 CHARLES D. KNOWLTON, M. D., *Demonstrator of Anatomy.*
 RICHARD M. PEARCE, JR., M. D., *Demonstrator of Physiology.*
 THOMAS F. GREENE, M. D., *Demonstrator of Anatomy.*
 J. D. C. CLARK, M. D., *Assistant in the Theory and Practice of Medicine.*
 GEO. A. WEBSTER, M. D., *Lecturer on Otology.*
 WILLIAM A. WHITE, M. D., *Lecturer on Diseases of Children.*
 EDWARD E. THORPE, M. D., *Assistant in Medical Chemistry.*
 FRED. H. MORSE, M. D., *Lecturer on Electro-Therapeutics.*
 CHARLES L. CUTLER, M. D., *Assistant in Gynæcology.*
 FRED. S. RADDIN, M. D., *Lecturer on Genito-Urinary Surgery.*
 GEO. H. FURBISH, *Teacher in Bromfield-Pearson School.*

The following new appointments have been made for one year : —

HOWARD H. HIGBEE, A. B., Ph. D., *Instructor in Qualitative Analysis.*
 E. CHANNING STOWELL, M. D., *Instructor in the Diseases of Children.*
 CHARLES C. STROUD, A. B., *Instructor in Physical Training.*
 HARRY GRAY CHASE, B. E. E., *Instructor in Electrical Engineering.*
 THOMAS A. MIGHILL, A. B., Ph. D., *Instructor in Organic Chemistry.*
 VIRGIL L. LEIGHTON, A. M., *Assistant in Qualitative Analysis.*
 JOHN W. EDWARDS, S. B., *Assistant in General Chemistry.*
 ORLANDO F. LEWIS, A. B., *Tutor in Modern Languages.*
 HERBERT E. CUSHMAN, A. M., *Assistant in Philosophy.*
 HOWARD S. DEARING, M. D., *Assistant in Clinical Medicine.*
 SAMUEL C. EARLE, A. M., *Assistant in English Literature.*
 MARY E. WELLINGTON, *Prosector of Anatomy.*
 CHARLES A. HEBBARD, M. D., *Demonstrator of Legal Medicine.*
 GEORGE A. BATES, D. D. S., *Lecturer on Histology.*
 WALTER J. OTIS, M. D., *Lecturer on Rectal Diseases.*
 WILLIAM S. BOARDMAN, M. D., *Lecturer on Laryngology.*
 HAIRABED S. DJELALIAN, *Assistant in General Chemistry.*
 FRED HILLIARD ROBINSON, *Assistant in Medical Chemistry.*
 HENRY P. JOHNSON, *Assistant in Bacteriology.*

Last year I announced the appointment of Professor H. A. Dearborn as Registrar. The very rapid increase of the duties of that officer have rendered the division of his work necessary. This has been done by the creation of the office of Bursar, to which position the Rev. W. A. Start, A. M. has been appointed.

The whole number of students admitted to the College in all departments is one hundred and sixty-four. They are distributed as follows:—

Graduates	3	
Freshmen (Classical)	41	
Freshmen (Engineers)	43	
Specials	10	
	—	97
Divinity School	14	
Medical School	46	
Bromfield-Pearson School	7	
	—	67
		164

The whole number enrolled in the College including the Bromfield-Pearson School, is three hundred and ninety-four. They are distributed as follows:—

Graduate Department	6	
Courses in Liberal Arts:		
Seniors	20	
Juniors	29	
Sophomores	27	
Freshmen	41	
	—	123
Engineering courses:		
Seniors	2	
Juniors	12	
Sophomores	34	
Freshmen	43	
	—	91
Special Students	26	
Total in College of Letters	240	
Total in Divinity School	43	
Total in Medical School	104	
Total in Bromfield-Pearson School	7	
		394

The whole number of women students enrolled in all departments is seventy-two; twenty-one more than last year. They are distributed as follows:—

College of Letters	39
Divinity School	8
Medical School	24
Graduate Courses	1
Total	72

The whole number of degrees given in course at the late Commencement was sixty-four, as follows: —

Bachelor of Arts	18
Bachelor of Philosophy	5
Bachelor of Civil Engineering	3
Bachelor of Divinity	9
Doctor of Medicine	19
Master of Arts	7
Electrical Engineer	1
Civil Engineer	1
Doctor of Philosophy	1
Total	64

No new buildings have been undertaken during the year. Those that were in process of construction at the beginning of the year have all been completed. Owing to the delay in getting it ready for occupancy Metcalf Hall was only about half filled with students, but the prospect is that for the ensuing year it will be entirely filled. The department of Biology has experienced great relief in the fitting up of new laboratories in the extension to the Barnum Museum of Natural History. The new chemical building, although exceedingly simple and inexpensive, has proved to be well adapted to its uses and has greatly increased the scope of the department. Indeed, few colleges in the country are better equipped for chemical work than we are.

The following is a detailed account of the several departments of instruction: —

Latin. — The Freshman class read one book of Livy, Cicero's Cato Major, and three books of the Odes of Horace. They

also had one exercise a week in Latin composition and one in Roman history and antiquities. Frequent essays on topics suggested by the work of the class-room were prepared and read by members of the class. Several members of the class took one hour a week for extra work, reading Cicero's *Laelius*. The Sophomores read several of the *Satires* and the *Ars Poetica* of Horace, the first book of Cicero's *Tusculan Disputations*, and the *Adelphi* of Terence. Nearly all, besides the regular course, took one hour a week of extra work. Thirteen Juniors and two Seniors read the principal *Satires* of Juvenal, a large number of Pliny's letters, the *Adelphi* of Terence, Cicero's *Laelius*, and the *Ars Poetica* of Horace. A class of eight men, composed of Seniors, Juniors, and Sophomores, pursued the study of archæology and the history of ancient art, meeting twice a week for nearly the whole of the year.

In view of the increasing demands made upon the Professor in consequence of the large number of students now in the College, the almost unlimited extension of the elective system, the necessity of employing new and more varied methods of instruction, and the broadening of the field of classical study and research so as to embrace comparative philology, history, archæology, and other related subjects, it is suggested that, as has already been done in every other department of the College, some young man thoroughly equipped for such a position by an extended course of study and first-class training be appointed to assist the Professor in the work of his department.

Greek. — Four Juniors elected Greek with Professor Schneider throughout the year, reciting three times a week. The text-books were: *Æschylus's Prometheus*, *Theocritus's Idyls*, *Plato's Symposium*; and for sight reading: *Lucian's Dialogues* and *Tyler's Greek Lyrics*. After reading the *Symposium*, several lectures were given to the class with reference to the subject matter of the *Dialogue*, as also with reference to the character of

the several speakers and the relation of the several speeches to each other, showing the gradual progress made in them. Two Seniors elected Greek, reciting three times a week during the year. Text-books: Pindar's Odes, Aristotle's Ethics, Plato's Republic. For sight-reading: Xenophon's Hellenica, with especial reference to the history of the times; Tyler's Greek Lyrics.

The Ethics of Aristotle furnished a number of subjects for discussion, and during many an hour so-called translation made little headway, the time being consumed in discussing ethical questions, as they presented themselves in the course of the reading. The same may be said with regard to the contents of Plato's Republic.

During the past year, the Professor of Classical Philology, Dr. Graves, gave instruction aggregating fifteen hours a week for the first term and seventeen hours for the second term. Each term six hours were devoted to elementary Greek, three both to Greek II. and Greek III., and three to sight reading. During the second term, a special course in old Latin, occupying two hours a week, was also given. The work of the year in all classes was very successful, as the classes were unusually good. Great interest in the work was shown throughout. The Freshmen pursued the regular course in the Historians, Homer and Sophocles, and the Sophomores made a study of the orators and dramatists. The sight classes in Greek read from the Odyssey of Homer, while that in Latin gave its time to Pliny's Epistles and the Divus Julius of Suetonius.

The course in old Latin was an interesting feature of the department's work. The class was composed mostly of Juniors and Seniors who had specialized in Latin. Allen's Fragments of Early Latin was used as the text and the recitations were supplemented by lectures and theses.

Mathematics.—On reviewing the work of the Mathematical Department for the year, three points of especial importance should be mentioned. First, concerning the number of hours of instruction, as the Catalogue does not suggest these facts, during the year. Mr. Sanborn taught one division of the Sophomore Engineers in Calculus three hours a week during second term. Mr. Myrick taught the Freshman Engineers in Solid Geometry, in two divisions, two hours each a week for six weeks, and in Plane Trigonometry three hours a week, in two divisions, for second term; also he taught the same class four hours a week in Algebra, for a half-year, in two divisions. Mr. Wren taught during first term two divisions of Sophomore Engineers in Analytic Geometry three hours each a week. In the Bromfield-Pearson School, he taught a class in Algebra three hours a week; a class in Geometry three hours a week, and a class in Analytic Geometry four hours a week. Besides, he took charge of a section in Surveying to assist Professor Bray during part of this term. During the second term, he had two divisions of the Sophomore Engineers in Calculus three hours each a week, and a division in Plane and Spherical Trigonometry three hours a week. In the Bromfield-Pearson School, he also taught a class in Algebra and Trigonometry three hours a week; in Geometry three hours a week, and in Calculus four hours a week.

Professor Brown had the Freshman Class in two divisions through the year, in Algebra, Solid and Spherical Geometry, and Plane Trigonometry, three hours a week; an Elective Class in Analytical Geometry three hours a week during first half year; the Senior Engineers in Calculus during first term, and in the Method of Least Squares during the second half year, twice a week; an Elective Class in Differential Equations, second term, three times a week; an Elective Class of five Freshmen in Advanced Algebra, second term, three times a week; an

Elective Class in Spherical Trigonometry and Three-Plane Analytic Geometry, second term, three times a week; the Junior Engineers in Calculus three times a week through the year.

This gives in term-hours: —

Mr. Sanborn	3	
	—	3
Mr. Myrick	12	
“ “	6	
	—	18
Mr. Wren	6	
“ “	6	
“ “	3	
	—	15
Professor Brown	12	
“ “	3	
“ “	4	
“ “	3	
“ “	3	
“ “	3	
“ “	6	
	—	34
Mr. Wren in Bromfield-Pearson School . . .	20	
	—	20

Secondly, the Professor calls especial attention to the very valuable service the College is getting from Mr. Wren. He assumed his duties at so youthful an age, that there were some misgivings as to his success with students, many of whom are his equals in age. He brought to his work not only acquirements in Mathematics that had been equalled by none of his predecessors in the office of instructor, but a mind gifted in mathematical talent. Besides, he is endowed with the requisites of a teacher in an eminent degree, having unfailing patience and a desire to give to any student of his time as long as the student has a desire to learn. In all this he gives the highest promise to become a very strong teacher of Mathematics.

Thirdly, the Professor thinks that the required six hours in Mathematics should not be limited to Algebra, Solid and Spher-

ical Geometry, and Trigonometry. If any students have no desire to study Solid and Spherical Geometry, they should be allowed to take in its place any mathematical study that they may be qualified to pursue; say, Surveying, Elementary Mechanics, or Descriptive Geometry.

Civil Engineering. — Owing to the change from a three to a four years course in Engineering there was no regular Senior class to graduate this year. There were, however, three men taking senior Civil Engineering work who received their degrees at the Commencement in June. During the first term, from September to February, the work of the Professor was in Applied Mechanics (out of course), Highway Construction, Railroad Curves, and Land Surveying. The latter study is now required of all second-year Engineers, and embraces text-book work with notes and problems, field work in measuring and laying out land, together with practice with level, and establishing grades. Some practice also is required in plotting and lettering, and in profile drawing; all from notes of actual work in the field. At the beginning of the second term in February the regular work in Applied Mechanics began with all Junior Engineers. This consisted of three exercises a week of text-book work with problems and notes, and one exercise of three hours of laboratory work. Also classes were taught in Masonry Construction, Hydraulics, and in Railroad Location.

Under Mr. Daniels, the Freshman Class in Engineering did the usual work in Mechanical Drawing, three periods a week during the year being devoted to it. The amount of work accomplished was somewhat greater than that of former years. This class also did free-hand lettering during the first term, two half periods a week. Eleven small sheets were finished, including all the styles in common use. All Sophomores in the Engineering Department were required to take an elementary

course in Surveying in the first term. This included field work with compass, transit, and level, theory from Carchart's Plane Surveying, and work in plotting and making profiles. Carefulness in making and working out notes was insisted upon throughout the course. The Juniors of the Civil Course worked with transit, level, and plane table four hours a week for the year. During inclement weather this was replaced by drawing. A problem in street construction was carried through in field and drawing-room. Structures in wood and stone were also studied. Senior work in Civil Engineering included field practice with transit, dumpy, and hand levels; drawing-room work in topography and structures; roofs and bridges. Lack of time forbids any but a short course in the last-named subject. Some of the leading principles were developed by the aid of apparatus in conjunction with the printed text. The cases considered were few, but were worked out with care and at some length.

The Department has acquired a Thacher's Calculating Instrument, the gift of Mr. Fred S. Pearson.

By Mr. Sanborn work was done as follows:—

First Term.

Junior class.

12 Engineers } in Steam, 3 hours a week.
2 Electives }

Sophomore class.

(a) { 20 Engineers } in Elementary Mechanism, 1 hour a week.
3 B. P. students }

(b) 19 Engineers in Elementary Mechanism, 1 hour a week.

(a) 19 Engineers in Drawing, 4 hours a week.

(b) 19 Engineers in Drawing, 4 hours a week.

Second Term.

Sophomore class.

(a) 15 Engineers in Drawing, 4 hours a week.

(b) 10 Engineers in Calculus, 3 hours a week.

Freshman class.

35 Engineers in Mechanics, 2 hours a week.

In steam the work led up to the intelligent use of calorimeters, gauges, indicators, etc., and the testing of engines and boilers. A number of tests were made with the engines at our command. The work can be done to much better advantage when actual tests can be made in every case. This is at present impossible. In mechanism the work comprised a study of the movements of the simple mechanisms, so that the student could more quickly make an analysis of different existing machines, and could more readily apply mechanical principles.

Electrical Engineering.—During the first term, Professor Hooper gave instruction in electro-dynamic machinery, to an elective class of four. In the second term the Juniors read Thompson's Dynamo, reciting three times a week. During the first term Mr. Myrick instructed the Juniors in the theory and practice of simple electrical measurements by means of lectures twice a week, and work in the electrical laboratory two exercises a week. This work was continued in the second half year by the Professor. One graduate student, a candidate for the degree of Electrical Engineer, continued his studies in the mathematical theory of alternating currents. He also assisted the Professor in a study of electric railway motors, the experimental part of this work being carried out at the Central Power Station of the West End Street Railway Company. During the latter part of the year this student made an elaborate investigation on the electrical resistance of the human body and discovered facts believed to be new and important. During the whole year the machine shop has been in operation at least one evening a week and some twenty students have voluntarily given more or less time under the direction of the Professor to the manufacture and repair of electrical apparatus and machinery. Early in the latter half of the year, H. G. Chase, B. E. E., was appointed assistant in Electrical Engineer-

ing and rendered valuable services in the laboratory and in the dynamo room. The course thus entered upon should be continued. It is usually possible to secure the services of one or more recent graduates at a merely nominal cost to the College. These men, besides relieving the professor in charge of much of the drudgery of laboratory work, and doing many things that he cannot now find time to do, would be fitting themselves for better positions as teachers and engineers and would secure the prestige of official connection with the College in obtaining such positions.

To an extent probably not equalled by any other branch of instruction, Electrical Engineering demands a large and varied equipment suitably located for carrying on its work. Our equipment is incomplete, and until the erection of the promised Engineering Building even such as we have cannot be fully utilized. The problem of keeping fifty or sixty men suitably employed in the laboratory during the present year is one the solution of which has not yet been found.

In addition to work, as Walker Special Instructor, reported above, Mr. Myrick gave through the first term, instruction in electrical theory two hours a week to the Junior Engineers by means of recitations and lectures accompanying Vol. II. of Stewart and Gee's Elementary Practical Physics. From November the Junior Engineers were given electrical measurements four hours a week in the laboratory, using Vol. II., Stewart and Gee, as the basis of instruction, the work being recorded and results tabulated by the students. During the second term, instruction in physical manipulations and measurements was given to two sections of Sophomore Engineers, six hours a week to each section. In this work special emphasis was given to a correct understanding of principles by means of lectures, these being followed by measurements and other work depending upon these principles, the whole being exposed by

the student and methodically recorded step by step in his notes, followed by final tabulation of results.

Drawing and Shopwork.—The studies pursued and the number of students in attendance are as follows:—

	<i>First Term.</i>	<i>Second Term.</i>
Freehand Drawing.	27 Freshmen. 1 Sophomore. 1 Junior. 5 Bromfield-Pearson.	
Elementary Mechanical Drawing.	25 Freshmen.	24 Freshmen.
Elementary Machine Drawing and Kinematics.	38 Sophomores.	28 Sophomores.
Elements of Mechanism.	38 Sophomores. 3 Bromfield-Pearson.	
Advanced Machine Drawing and Elementary Design.	11 Juniors.	10 Juniors.
Special Drawing.	3 Freshmen. 2 Sophomores. 1 Senior.	12 Freshmen. 2 Sophomores. 1 Senior.
Civil Engineering Drawing.	2 Juniors. 1 Bromfield-Pearson.	2 Juniors. 2 Seniors. 1 Bromfield-Pearson.
Descriptive Geometry.		26 Freshmen. 6 Sophomores. 2 Bromfield-Pearson.
Carpentry and Turning.	28 Freshmen. 1 Bromfield-Pearson.	
Pattern Making and Moulding.	33 Sophomores. 1 Bromfield-Pearson.	27 Freshmen. 1 Bromfield-Pearson.
Forging.		25 Sophomores. 1 Bromfield-Pearson.
Machine.		1 Sophomore. 10 Juniors.

Two of the allotted four hours a week were devoted to a course in Freehand Lettering and Figuring under the instruction of Mr. Daniels. The remainder of the time was spent in Model Drawing and Machine Sketching, instruction by Professor Anthony. Considering the limited time, the work was fairly good. This elementary work should be included in the requirements for entrance to the Engineering department, but until such time it must be made a very important phase of Freshman work, especially that relating to machine sketching. The course in Elementary Mechanical Drawing was conducted by Mr. Daniels. During the first term the instruction was given by Mr. Sanborn in Elementary Machine Drawing.

The second term was devoted to the study of Gearing under the instruction of Professor Anthony and Mr. Sanborn. The course comprised a series of lectures, and written exercises on the subject, beside the execution of the regular problems in theory and practice. Four hours a week were given to the course. The elements of Mechanism were taught by Mr. Sanborn during the first term. Machine Drawing and Design were pursued by the Juniors four hours a week during the first term, and two hours a week during the second term. This latter period should have been devoted to the machine shop, but the lack of necessary equipment made it necessary to substitute the drawing. The study for the year was equally divided between advanced Machine Drawing and the solution of elementary problems in Design. The course in moulding having been established since the entrance of this class to College, it was found necessary to devote a short time to a special course in this subject in order that the students might be better fitted for their studies in Design. Civil Engineering Drawing was taught by Mr. Daniels.

The course in Descriptive Geometry was attended with

unusual success, both in the interest manifested and the thoroughness of work. The new methods inaugurated last year, and more completely developed during the term just closed, have proved to be conducive to a more thorough understanding of the somewhat difficult subject, and to effect a considerable saving of time to the student. To complete this work it will be necessary to publish our course in suitable form for student use, as has been done with the Freshman course in drawing.

During the first term five and one half hours a week were given to Carpentry and Turning, the character of the work differing but slightly from that of the preceding year. Pattern Making and Moulding were pursued during the second term, the special equipment for the latter being first used by this class. The course in Pattern Making comprises the construction of patterns from drawings, some of which are made by the students of this class: the moulding of these patterns, and the making of the necessary cores, and finally the casting of the piece. By means of the moulding shop it is possible to make the student acquainted with many of the more intricate patterns, which time will not permit the construction of during the course. For the purpose of testing the student's understanding of this subject, and enabling him to obtain a more comprehensive knowledge of the work, it is proposed to introduce written exercises and freehand sketching as a part of the course. The Sophomores completed the course in Pattern Making during the first term, three hours a week being devoted to the subject. Hereafter the course will be completed during the Freshman year.

The schedule of topics for the second term of the Sophomore year specified six hours a week at the forge, but the difficulty encountered in arranging the program necessitated

reducing this time one half. This change proved to be advantageous, as in the revision of the course it was found to be possible to permanently shorten the course without material loss to its educational value. Very commendable work has been done by the class, especially in the forging and tempering of tools which will be required in the machine course for the coming year.

The course in Machine Work was shortened one half by reason of the lack of necessary equipment. Under the instruction of Mr. Myrick the class performed very creditable work in chipping and filing, scraping and fitting; pursuing a course in bench work for three hours a week during the second term.

Physics. — The schedule hours were followed during the year.

The class in Physics was the largest we have ever had: seventy-five members. The whole subject was treated exclusively by lecture and experimental demonstration and illustration so far as means at hand would allow. So far as examination papers could show, it appears that as much was accomplished as when daily recitation was required. The attendance was regular, and there appeared to be no desire to run away from the exercise. The size of the class made it needful to crowd the room, and those in the back part of it often could not see the experimental work advantageously, not so much for distance as lack of proper elevation. For examinations the class had to be divided and half of it held in another room by another person, as there is now no possibility of finding another hour than that set in the program.

A course of lectures (Course 7) was given the first term. It began with four students, but ended with a dozen, some coming from the Divinity School. A class in Astronomy also, four students, was maintained through the first term. During the

second term a class of fourteen studied Spencer's First Principles. A course of lectures on electrical principles and apparatus was given to the Senior Electricals. Four students elected laboratory work, and three pursued it through the year. It seems proper to mention here that as the result of this Mr. R. B. Smith made the discovery that the oxygen of the air piles up about the poles of a magnet and may be present in quantity as great as one per cent more than in ordinary air, a fact not only interesting but likely to have some therapeutic value. The crowded state of the lecture room and the congestion in the laboratory is a constant source of worry. The apparatus needs replenishing and suitable cases should be provided for its safe keeping.

Chemistry.—There was practically no teaching done by the Professor last year, as none of the students interested in Chemistry were sufficiently advanced to take higher courses in the subject. Dr. Bucher gave a course of lectures on Organic Chemistry which was attended by seven students, and Dr. Clark had the supervision of four students who elected work in Quantitative Analysis. The research work published during the year comprised two papers by the Professor which appeared in the *Journal of the German Chemical Society* under the titles :—

I. On the addition of sulphur to unsaturated organic compounds.

II. On the determination of melting points of difficultly fusible and so-called infusible organic substances. And a long monograph entitled *Researches on Alloisomerism*, which appeared in another German journal, and which has attracted some attention from chemists, as in it was proven experimentally that many of the assumptions on which the recent development of the theory of chemistry in space is based are untenable. The number of subjects in Chemistry was increased from five to

ten, and every opportunity and facility are now given for advanced work.

Instructor Durkee taught General Chemistry to fifty-three engineering students during the first term. Of these, ten were Juniors and forty-three Sophomores. All met the instructor for lectures with recitations twice each week. For laboratory work, the Engineers were divided into two groups. Each group had laboratory work two hours twice each week, principally because the time was unusually short; the work of the Engineers was not so satisfactory as that done by Engineers in previous years. During the year, Mr. Webster and Miss Brown assisted materially with the instruction, in the preparation and care of re-agents, and in the distribution of apparatus. Thirty-nine Engineers were taught Qualitative Analysis during the second term. With the exception of six lectures, the instruction was given in the laboratory. The men were arranged in two groups and each group had nine hours a week of laboratory work. For the students electing, special courses in General Chemistry and Qualitative Analysis were given. That in General Chemistry was taken by nineteen students, and occupied six term hours. Half the time has been devoted to lectures with recitations and half to laboratory work. The class has covered the usual ground in a very satisfactory manner. The course in Qualitative Analysis for the elective students has been given to nine men. The instruction has been given by lectures, and in the laboratory six hours each week for the year.

Biology.—The work in Elementary Biology, which runs through the year, was satisfactorily completed by sixteen students. Comparative Anatomy, also a year's course, was completed by six. In the spring term a course of lectures and laboratory work was given in normal Histology to a class of three who intend later to study medicine. In the Medical School,

two courses of lectures were given by the Professor, each of one lecture a week, running through the year. One was normal Histology, a required subject for first-year men. This was supplemented in the spring term by laboratory work in the Barnum Museum. This laboratory work, which was optional, was taken by twenty out of the forty-two students in the first class. The other course, Embryology, was elective and was attended on the average by about ten students. A pleasing feature was the presence of from two to four practitioners at almost every lecture. The character of the work done by the college student was better than ever before. In the Medical School it was very uneven.

In the Graduate School three students have been under the Professor's direction: two for the year, the third for a few weeks, in completion of work begun last year. One of the Fellows, Frederick Courtland Kenyon, completed three years of graduate work and was granted the degree of Doctor of Philosophy at commencement. His thesis, upon *The Morphology of the Pauropida*, was a fine piece of work and will be issued shortly as number four of the Tufts College Studies. Mrs. Durkee, upon completion of her work in Chemistry and Biology, was given the degree of Master of Arts at Commencement.

The two fellowships in Biology have been awarded for the coming year to Fred D. Lambert, Ph. B., and Guy C. Winslow, A. B., both men of promise and both candidates for the degree of Doctor of Philosophy.

The wisdom of establishing the Tufts College Studies is shown in the increase of the library by exchanges received. Already over a hundred societies are sending us their transactions regularly. Many of these are kept in the College Library, only those relating to Natural History being transferred to the Barnum Museum. This departmental library

presents the following statistics for the year. The additions for the year have been thirty-four volumes and three hundred and forty-two serials and pamphlets. During the year, one hundred and eleven parts have been bound and the library now contains seven hundred and seventy-nine volumes and thirteen hundred and sixty-nine numbers of serials and pamphlets. The additions were derived from the following sources: Exchange, two hundred and twenty-two; purchase, eighty-four; the remainder being gifts from the following persons: J. S. Kingsley, forty-three; Frothingham Heirs, nine; Essex Institute, eight; A. Giard, six; Geo. A. Bates, two; J. P. Marshall and J. A. Moffat each one.

But little has been added to the equipment during the year. The policy has been to purchase what was necessary and not to buy with the possibility of usefulness in the remote future. The laboratory fees have sufficed to maintain the general equipment and to purchase materials, chemicals, glassware, etc., for class use. Outside of these, the chief additions have been a Minot microtome, a homogeneous immersion objective and the series of skeletons and alcoholic preparations received in exchange, of which mention is made in the report of the Barnum Museum.

The most important matter of the year is the completion of the west wing of the Barnum Museum, which experience shows is admirably adapted in most respects for its purposes. The three large laboratories are used respectively for the elementary class, for advanced students, and for graduates. Besides, the wing furnishes a library room, a study, and much needed storage rooms, and, on the upper floor, an additional exhibition room, the cases for which are now in process of construction.

Geology and Mineralogy.— During the first half year eleven

students elected in the Department of Mineralogy. Instruction was given in Blowpipe Analysis of minerals. Each student was provided with the necessary reagents and became by practice acquainted with the most important minerals of which there are a large number and variety of specimens on the shelves of the cases in the mineralogical work room. In the latter stage of the course, the quantitative analysis of gold and silver ores is made a specialty. A delicate assay balance, and other apparatus necessary for this purpose are provided.

In the second term, the study of Geology is pursued with the use of text-book and lectures. A large collection of rock specimen and fossils is contained in the cases of the lecture room and will be accessible to the students for study.

During the past year sixteen students elected in the department of Mineralogy and Geology.

Modern Languages. — The demands upon the department of Modern Languages, and in particular upon the German section, reached their maximum in the year just ended. Six courses in German were given, while the work in the most advanced of these, being taken for the first time and making greater demands upon the time of the Professor than several of the other courses combined, his duties in connection with this subject alone were unusually arduous. Beside the German Courses, however, the head of the department gave two others, — one in French and one in Italian, both for the entire year, making a program of twenty-four class-room hours a week.

In general the classes have accomplished the usual amount of work, though in some cases, notably that of beginners in German, the large size of the class has perhaps been to the disadvantage of the less able members.

Appended is a schedule of the courses given by Professor Fay, with the numbers enrolled and the text-books employed.

COURSES GIVEN IN 1894-1895 BY THE WADE PROFESSOR
OF MODERN LANGUAGES.

- GERMAN I. [50 in first term; 31 in second term.] Joynes-Meissner Grammar, Part I; Lewis's Exercises, Group II.; Bernhardt's, *Es war Einmal*; Riehl's, *Burg Neideck*; a few ballads.
- GERMAN II. [27 in first term; 24 in second term.] Heyse, *Das Mädchen von Treppi*; Freytag, *Der Rittmeister von Alt Rosen*, *Aus dem Staat Friedrichs des Grossen*; several lyric poems; the geography of the German Empire in its principal features.
- GERMAN III. [24.] Lessing, *Minna von Barnhelm*; Goethe, *Hermann und Dorothea*; Schiller, *Die Jungfrau von Orleans*, *Der Geisterseher*.
- GERMAN IV. [7.] Schiller, *Der Geisterseher*, *Die Jungfrau von Orleans*, *Aus dem Dreissigjährigen Krieg* (Bernhardt's *Gustav Adolf in Deutschland*), *Wallenstein*; Goethe, *Egmont*.
- GERMAN V. [9.] Lessing, *Nathan der Weise*, *Prosa*; Goethe, *Tasso*, *Iphigenie auf Tauris*; Buchheim's Prose Composition once a week.
- GERMAN IV. [2.] A special study of the life and works of Goethe, Schiller, Heine, and Jean Paul, with extended reading of their works. This included, for Goethe, *Lyrics*, *Goetz von Berlichingen*, *Faust*, Parts I. and II., with Düntzer and Schröer's Commentaries; for Schiller, *Lyrics*, *Don Carlos*, and several of his philosophical essays (*Anmuth und Würde*, *Naive und sentimentalische Dichtung*, and *Erziehung des Menschengeschlechts*); for Heine, *Lieder*, *Harzreise*, *Deutschland*; for Jean Paul, portions of *Flegeljahre* and *Siebenkäs*.
- FRENCH IV. [12.] A study of the seventeenth century. Crane, *La Société Française au xvii^e Siècle*; Molière, *Les Précieuses Ridicules*, *Les Femmes Savantes*; Corneille, *Cinna*, *Polyeucte*; Racine, *Athalie*. Walter, *Classic French Letters*; also Voltaire's *Zaïre*, and *Mérope*, to show the continuance of the classic drama in the eighteenth century.

ITALIAN. [5.] Grandgent's Grammar, Gherardi del Testa, *L'Oro e l'Orpello*; Pellico, *Le Mie Prigioni*; Maffei, *Merope*; Dante, the *Inferno*, and selections from *Purgatorio* and *Paradiso*.

The instructor in French had charge of the regular courses 1, 2, 3, and 5. The number of students and the work done in these courses were as follows:—

FRENCH 1. Fourteen students; the essentials of grammar, with Grandgent's Short French Grammar as the text-book; reading of Whitney's Introductory Reader and Volume 5 of Macmillan's French Classics.

FRENCH 2. Thirty-two students; grammar and syntax, with exercises in composition from various sources; reading of Berthet's *Le Pacte de Famille*, Souvestre's *Le Mari de Mme. de Solange*, Super's Selections from French History, De Musset's *Pierre et Camille*, Fontaine's *Fleurs de France*, Racine's *Athalie*.

FRENCH 3. Twenty-five students; review of the principles of syntax; reading of Racine's *Esther*, *Phèdre*, and *Mithridate*, Corneille's *Polyeucte*, Molière's *L'Avare*, De Vigny's *Cinq-Mars*, and Taine's *Les Origines de la France Contemporaine*.

FRENCH 5. Eight students; reading of two volumes of Sainte-Beuve's *Essays*, Selections from the Lyrics of Lamartine, Hugo, and De Musset, Beaumarchais's *Barbier de Seville*, Pailleron's *Le Monde où l'on s'ennuie*, Freeborn's Selections from Alphonse Daudet, Van Daell's Selections from Paul Bourget, Leune's *Difficult Modern French*.

The work of the Engineers in French, under Mr. Wade, was conducted in four classes as follows: a class in Elementary French, composed of six Freshman Engineers, who for various reasons had not previously taken French, and one student from the Bromfield-Pearson School. This class was formed late in October, and work was suspended late in May. The usual

amount of grammar and about one hundred pages of reading were covered.

The Freshman Engineers reviewed the grammar, using Joynes' Minimum French Grammar, and read the following works: Dumas' *L'Évasion du Duc de Beaufort*, Halévy and Labiche's *La Cigale chez les Fourmis*, about one hundred pages of Herdler's Scientific French Reader, George Sand's *La Petite Fadette*, and a portion of Halévy's *L'Abbé Constantin*; outside of the class, Erckmann-Chatrion's *L'Histoire d'un Pay-san* was read and an examination passed.

The Sophomore Engineers, in two divisions, pursued for the entire year a course of Nineteenth Century authors, reading selections from George Sand (*La Mare au Diable*), Balzac (*Le Curé de Tours*), De Vigny (*La Canne de Jone*), Daudet (Selections), Angier (*Le Gendre de M. Poirier*), Hugo (*Hernani*). One book of Volume I. of Hugo's *Les Misérables* was read outside the class. During the last half year the principles of syntax were reviewed, using Chardenal's Advanced Exercises as a text-book.

History. — In this department four subjects have been treated during the past year. General History (History 1), Modern European History (History 2), American Colonial History (History 4), and the Political and Constitutional History of the United States (History 5). The seminary in American History (History 9) has also been at work during the year.

History 1 was given during the first term to fifty-five students, fifteen of whom were Juniors in the Engineering courses, for whom this was a required subject. Of the remaining forty, who elected the subject, five were from the Divinity School, and the others were special students, Sophomores and Juniors. Three lectures were given each week and a line of parallel reading was prescribed. Notes by the class were required

and were subject to examination by the instructor. Each member of the class was required to submit a thesis on some subject chosen from a list prepared by the instructor, and a written examination was held at the close of the half year.

In History 2, also given during the first term, six Juniors were enrolled. The work was a study of European History since 1648. The instruction was by lectures, topical study, and reading of the best available authorities. A considerable amount of individual work was done by each member of the class.

History 4 was given in the second term to a class numbering twenty-six, Special Students, Sophomores, Juniors, and Senior. A careful study of colonial development was made, with Thwaites's Colonies as a basis, by means of lectures, topical reports, discussions, and frequent written work.

In History 5 two Seniors were enrolled. The work consisted of a study of the best writings on our national history, with frequent reference to original authorities, investigation of topics by the students, and informal discussion.

As in the previous year some interesting work was done in the way of independent investigation by two Seniors working in History 8. The topics considered included the Mayflower Compact, Roger Williams in Massachusetts, the Beginnings of New England Commerce, Witchcraft in New England, the New England Confederacy, the Albany Congress, and Franklin's Plan of Union. In the second term one member of the seminary made a study of the early history of Haverhill, and another prepared a valuable paper on the New Hampshire land grants and their struggle for statehood. Final honors were awarded to Charles Neal Barney, of the graduating class.

The Rev. John Coleman Adams, D. D., kindly gave two lectures on Oliver Cromwell and Abraham Lincoln, under the auspices of the department. These lectures were open to the

public and were well attended. The department needs a lecture fund that will enable it to maintain each year a course of such lectures, for the extension of its usefulness within the college.

As in previous years since the department was opened, its efficiency has been seriously hampered by the lack of necessary equipment. This lack is more seriously felt as the work of the department is more fully developed and organized. It is now located in convenient rooms, where a working department library, for reference and special study, will be assembled as rapidly as circumstances will permit. It is very desirable that these rooms should be made attractive and should illustrate history. The department wishes to secure for this purpose, from friends who may be interested in its work, portraits and pictures of real historic and artistic value. The educational worth of such surroundings cannot be expressed in words, but it is an influence felt by both student and instructor.

There is immediate and pressing need of a small fund for the purchase of adequate maps. The intimate connection of geography and history must be presented graphically to be comprehended by students, and at present we have nothing for this purpose.

It is proper in this connection to mention gratefully the gift to the Library, by Thomas G. Frothingham, A. M., of the valuable collection of his father, the late Richard Frothingham. This collection, forming the basis of Mr. Frothingham's scholarly work in our colonial and early constitutional history, is of notable excellence in its field and of large practical value to the student of American history. Not since it was opened has this department received so valuable an addition to its working power.

Large sums are still needed, however, for books and other material, to enable the workers in this department, both students and instructors, to do what should be done in this important

field. The time seems to have come when it is desirable that the needs of the closely allied and important departments of History and Political Science should receive some attention, and their work should be systematically co-ordinated to secure the best results for a large number of students to whom they are subjects of first importance.

It is, perhaps, not out of place to note that through the initiative of this department, a conference on college entrance requirements in History was appointed by the New England Association of Colleges and Preparatory Schools, Tufts College having a representative on the conference. The result has been the preparation of a printed report, for the consideration of the association, having for its object the fuller and more perfect development of history teaching in the secondary schools, and the closer union of the colleges with secondary schools, so far as history is concerned. The views of the conference have strong support among college and secondary school teachers, and good results are hoped for from the movement.

English Literature and Oratory.—In the department of English Literature and Oratory, about one third of the Professor's time was as usual given to the latter subject, and two thirds to the former. The college class beginning Oratory was divided, according to the preference of its members, sixteen choosing to read *As You Like It*, and twenty-three preferring to study examples of senatorial speaking. Ten advanced students elected to debate current questions, and in the second term the class was interested to assume the form of a legislative body, preparing bills in committee that were afterward discussed and amended. The class continuing the study in the direction of dramatic reading numbered eighteen. In the Divinity School twelve students completed, during the first term, the required work in the subject, and eleven entered upon it during the

second term. A special class of five divinity students practised reading and extempore speaking for an hour a week during the first term. The usual public prize readings and extemporaneous speaking were held in June.

A class of forty followed the work of the classic school in English Literature, during the first term, paying special attention to Milton. In the second term twenty-six students read twenty plays of Shakespeare, besides making special study of Othello; and twenty-four students traced the course of the Romantic movement. In the two latter classes the experiment was tried of requiring the committing to memory of a definite amount of English verse, to be afterward written out in the class-room. The class of twenty-three studying Victorian authors gave emphasis to the work of Tennyson and Browning, with less attention to Ruskin and Carlyle. In all these classes essays were prepared, usually upon subjects not treated in the class-room. In the belief that opportunity should be offered, here as elsewhere, for acquaintance with Old English, the instructor, during the first half-year, read with two students one hundred and fourteen pages of the prose selections in Bright's Anglo-Saxon Reader. The advanced class in English Literature, after covering in outline the history of the drama to Marlowe, devoted its time to the preparation and public presentation in Goddard Gymnasium of the first English comedy, Ralph Roister Doister. The performance was witnessed by a number of teachers from preparatory schools and sister colleges, and has excited favorable comment.

As a natural result of the work in literature, and the constant use of books by an increasing number of students, the resources of the college library have been taxed to the utmost. It is hoped that some liberal provision may be made by which the books needed from time to time, as the tools without which the work in literature cannot profitably be pursued, will be steadily

furnished. Several hundred dollars devoted to this end would supply a number of grave deficiencies that still exist, notwithstanding the past generous contributions of the Joy Library Fund.

English and Philosophy.—During the year, material progress has been made in adjusting work to the requirements of the new curriculum,—such progress that the coming year may offer all the subjects named in the latest catalogue, with possibly some changes in their order. The subjects assigned to this professorship are grouped under the Departments of English and Philosophy, seven subjects in the former and six in the latter. As the English of the Engineering courses is done in classes separate from those in liberal arts, these subjects together call for no less than forty-nine term hours. About forty term hours have been given during the past year, but as some classes have been met in two or three divisions each, the actual number of class hours has been considerably larger.

This work could not have been done without additional teaching force. Mr. Whittemore, as instructor in English, has had charge of more than one half of the work in Rhetoric and Composition. It is now desirable, if not imperative, that a similar division be made in the department of Philosophy. The coming year invites at least the beginning of the long-delayed expansion of this important department, in which the College has been lamentably weak. If one man is to teach Psychology, both old and new, and Logic and Ethics and the History of Philosophy, together with even less than one half of the Rhetoric and Composition, the College must continue to be lopsided. It is to be hoped that some provision may speedily be made for the development of philosophical subjects.

The following is a schedule of hours, with brief description of class work, for the past year : —

English.

1. Freshman class. Forty-four members in two divisions, each division weekly for the year. Composition, largely extemporaneous, about two papers a month required. Also talks on which notes were taken, subject to examination.

6. Advanced Rhetoric, fourteen in class, mostly Juniors, three times a week for first term. A large amount of assigned reading, with reports and discussions, relating to the essentials of literature as art.

3, 5, 7. Miscellaneous class in Composition. Twenty-eight members, three times a week for second term nominally, but really individual work, in which each student was met once a week, requiring from six to ten hours of the Professor's time.

Philosophy.

1. Psychology. Twenty-four members in class, mostly Juniors, three times a week for first term. Basis of the work, Sully's Outlines.

2. Physiological Psychology. Three members in class, three times a week for second term. This was simply a voyage of exploration with a view to the possibilities of class work hereafter. It seems necessary to do something in this boundless field even if no equipment can be provided. More definite work will be arranged for the coming year.

3. Logic. To provide for the adjustment of classes to the new curriculum, Logic was repeated in the second term. Class for first term, eight members, mostly Seniors, three times a week. Basis of the work, Hyslop's Logic. Class for second term, seventeen members, mostly Juniors, three times a week. Jevons' Lessons, with large additions and frequent practical exercises.

5. Ethics. Four Seniors three times a week for first term. Basis of work, Calderwood; much additional reading.

7. History of Philosophy. One Senior directed in his work for one term.

Work in English under Instructor Whittemore is not included in this schedule.

Library.—The accessions for the year have been eighteen hundred and sixteen volumes, three thousand and ninety-two pamphlets, and twelve hundred and eighty-five numbers; by purchase seventy-eight volumes, one pamphlet, and seven hundred and four numbers; by donation sixteen hundred and forty-eight volumes, three thousand and ninety-one pamphlets and five hundred and eight numbers; by binding ninety-two volumes.

Among the accessions were three hundred and eighty-nine duplicate volumes, two hundred and ninety-nine of them in the Frothingham donation.

One of the most valuable donations the Library has received for many years came from heirs of the late Richard Frothingham, through Thomas G. Frothingham, A. M., and was made up of valuable historical works numbering twelve hundred and ninety-four volumes and two thousand one hundred and thirty pamphlets, many of them being very rare works. Another donation worthy of special mention is that of all the publications of the Egypt Exploration Fund, the gift of Mr. E. S. Dixwell. From Mr. J. C. J. Brown were received three rare books, and from Rev. Dr. Biddle one hundred and forty-six volumes, fifteen pamphlets, sixteen numbers.

Mr. Snow, the assistant, proved to be very helpful. He made a shelf list of the books and changed the numbers on the books. The catalogue has been modified to make the numbers correspond, so that now only four upper rows half way round remain to be done in the large room of the Library.

Political Science.—The President of the College gave instruction throughout the year three hours a week to a class of thirty

in Political Economy. Marshall was used as a text-book, and in addition to the text-book work, lectures were given on the subjects of finance, banking, tenure of land, and taxation. Problems were also assigned to the class and investigations required, the results of which were reported to the instructor. In Jurisprudence, Ancient Law was studied during the first term and International Law during the second term. Nine students elected Ancient Law and eleven International Law. Both subjects elicited a lively interest, and in some instances led students to carry their investigations far beyond the limits set in the class. Beside the regular classes three Seniors and one Junior, having Political Science as a major subject, took research work pertaining either to colonial or constitutional history and did very creditable work.

College Pulpit. — The President occupied the College pulpit, either in person or by exchange, mostly in person, every Sunday during term time. As was intimated in my former report, this is a great burden. The teaching done by the President amounts on an average to nine hours a week, or what is regarded by many teachers as an ample program. Add to that the administrative work devolving upon the head of the College, together with duty of pulpit preparation, it will be seen that the burden is very heavy and ought to find some relief. The spiritual interests of the College really demand that specific provision should be made for the care of the pulpit in some other way. The gift of a sum of money for this particular object would be as welcome as any that could be made, and would be sure of accomplishing great good.

In conclusion, I call attention to the reports of the professional and other special departments.

E. H. CAPEN.

TUFTS COLLEGE,

September 19, 1895.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President :

Few things are called for in the report of the Divinity School for the year 1894-95 beyond its statistics. Forty-three students were on its roll of membership for the year, seven Seniors, eight Middlers, fifteen Juniors, seven Sub-Juniors, and six Specials.

Including the President of the College and the Professor of Oratory, the school counts on its list of teachers eight resident professors, and three non-resident lecturers. During this year six lectures on Christian Economics were given by Rev. F. W. Hamilton, and four lectures on Some things which hinder the work of the Minister, by Rev. Dr. John Coleman Adams.

So far as the current work of the Divinity School is concerned, three features may be noted : Independent research on the part of the students ; increasing interest in Biblical studies ; and the emphasis, in all departments of instruction, which is put upon ministerial ability and character.

So far, too, as the methods of instruction deserve to be spoken of, they are to be commended, I think, as the methods of history and discussion, as distinguished from those of mere advocacy and individual opinion. More and more the resort is to what are called laboratory methods. What the school needs, therefore, is a growing reference library, for which we must look to our friends. If some person, or persons, who see that the hope of a great cause is in a well-instructed ministry, would provide a Reference Library Fund of five thousand dollars, the income only to be spent for books, it would lift the school out of all embarrassment in this particular ; for even so small a sum

as two hundred and fifty dollars a year would enable us to purchase books at the time when the work of the respective classes demands them.

This report cannot close without grateful reference to the man who was at once patron and benefactor of the Theological Department of the College. Alonzo Ames Miner will always be held in intelligent and affectionate memory by the Faculty and the students of the Divinity School, not only for his large interest in theological learning, but for his special interest in providing fit facilities for theological instruction in the noble building which bears his name.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 19, 1895.

THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President :

The second year's work in the Medical School closes with a good deal of satisfaction, and words of encouragement are coming to us from many sources.

There has been progress in the various departments of the school. All departments have been strengthened, and new departments established. The Department of Bacteriology has made an advance under the efficient management of Drs. Austin and Brown. Cultures are made, examinations of sputa and morbid specimens are subjected to critical tests, and the school is now able to furnish authentic reports to the various local Boards of Health in the Commonwealth at a small expense, and to local physicians at a low cost.

Among the new departments we may mention Dr. Jack as Professor of Otology, Dr. Channing as Professor of Mental Diseases, Dr. W. E. Boardman as Lecturer on Laryngology, Dr. Otis, Lecturer on Rectal Diseases, Dr. Raddin, Lecturer on Genito-Urinary Surgery, and Dr. Durrell as Professor of Medical Jurisprudence, so that to-day we have thirty-five on the teaching force.

During the year Dr. Darrah resigned as Lecturer on Clinical Surgery, but Dr. H. L. Smith, who is on the Surgical Staff of the City Hospital, was elected as Professor of Clinical Surgery. This opens a much larger field for clinical observation.

There have been one hundred and four matriculates during the year; according to the Catalogue, ninety-six, — forty-four in the Freshman class, twenty-seven in the Middle, and twenty-five in the Senior class, but eight came in too late to be pub-

lished, so that we have actually one hundred and four as against eighty last year. Nineteen came up for graduation and received their diplomas.

In our report last year we recommended the establishing of a fourth year to give more opportunity for clinical work. This has been accomplished, so that now there is an optional course of clinical work as a fourth year; not, however, absolutely essential for graduation at the present time, but quite desirable. The fourth year, however, will be made compulsory for matriculates of next year, *i. e.*, 1895-96. Those who have matriculated prior to 1894-95 may take this course or not, as they elect, with very little additional expense. This course will be of decided benefit to the student and will fit him for any position he may be called to fill in his profession.

There has also been an Extra Mural course opened, where students can, for a trifling expense, attend, and advance in special lines if they so desire.

Again, there has been established for Seniors the following electives: Neurology, Pediatrics, Otology, Legal Medicine, and Electro-Therapeutics. The student is required to select two of these before November 1 of each year as special studies.

The Suffolk Dispensary is now under the complete control of the Faculty, and has been an important source of clinical material.

There has been a constant desire on the part of the Faculty to make the school one of the best, and in some respects we are doing more than most of the Medical Schools in this country. In the first place, we are doing too much in General Chemistry, taking too much time, requiring too much of the student. It seems to me that we could do better to make General Chemistry, or at least a part of it, a preparatory study, and devote the time of students more to Medical Chemistry.

Again, we are giving too much time to the so-called specialties.

I think that instead of giving two lectures a week during the entire term, as in some instances we have done, we should limit the lectures on special subjects to one a week, or not to average more than one a week for the entire term. This will not debar a student from pursuing his studies in a special direction if he so desires, because having a fourth year of clinical work he can become a specialist in any direction he may elect.

The various societies in connection with the school are in a flourishing condition, and good will and good fellowship seem to prevail.

Dr. Austin, the Professor of Medical Chemistry, asked for and was granted a leave of absence for one year to pursue his investigations and studies in Europe. He leaves Dr. Thorpe, a very efficient chemist, to look after the work in the school during his absence.

I desire to say, in conclusion, that the work in the Medical School during the past year has been very gratifying.

The prospects for the coming year are encouraging. There are very strong indications of a large class. Everything seems to emphasize the fact that we must have more commodious quarters for another year.

Respectfully,

ALBERT NOTT, DEAN.

SEPT. 19, 1895.

THE BARNUM MUSEUM OF NATURAL
HISTORY.

REPORT OF THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President :

The principal event of the year has been the completion of the west wing of the Museum building to which allusion has been made in former reports. It is now regularly occupied by classes, and proves well adapted for its purpose.

The collections are in about the same condition as at the last report. Plans have been drawn for cases for the new exhibition hall and these are now being constructed by the janitor in his spare time, but so far he has been so occupied with the equipment of the new laboratories that he has had but little time for the cases.

The additions to the collections embrace, besides material for class work, the following : —

BY DONATIONS.

C. H. BARRETT, Medford : Skull of Woodpecker.

DR. C. W. STILES, Washington, D. C. : Parasitic Worms (*Distoma tricolor*).

MRS. THOMAS WHITWORTH, Medford : 27 species of Reptiles, Batrachians and Arthropods, from Madagascar.

DR. FRANK B. BROWN, Dorchester : 3 Embryos.

PROF. A. E. AUSTIN, Dorchester : 1 Embryo.

DR. HAMLIN, Charlestown : Tape Worm.

MR. F. D. LAMBERT, Class of '94 : 2 species of Sturgeon, Paddlefish, Garpike, Silver Gar, Lawyer, Burbot, and Siredon, from Muscatine, Iowa.

ROLAND G. HAMMOND, Brockton, Class of '68 : Great Blue Heron, mounted.

BY EXCHANGE.

SKELETONS OF Bat, Bandicoot, Hedgehog, Hawk, Woodpecker, Parrot, Crow, Pigeon, Hen, Gallinule, Heron, Goose, Gull, Tortoise,

Monitor, Alligator, Snake, Frog, Salamander, Perch, Carp, Pike, and Sturgeon.

SKULLS OF Cod, Shark, and Chimæra.

ALCOHOLIC PREPARATIONS OF Lacerta, Anguis, Chameleo, Bombinator, Loricaria, Leptocephalus, Chimæra, Myxine, Pyrosoma, Limacina, Atlanta, Dichelaspis, Scalpellum, Actheres, Argulus, Apus, Leptodora, Enchytræus, Piscicola, Pontobdella, Ligula, Velella, Spongia, Carinaria, Cymbulia, Ciona, Berœ, Cotylorhiza, Salpa, Cestum, Aplysia, Lizzia, Thysanozoon, Chætopterus, Pterotrachea, Halistemma, Collozoum, Thalassicola, Nausithoe, Hyperia, Sipunculus, Octopus, Sepia, Philonexis, Nebalia, Diplozoon.

In addition a considerable amount of material has been mounted for exhibition purposes and is now awaiting the completion of the cases for its proper display.

JOHN P. MARSHALL,

Director of the Barnum

Museum of Natural History.

TUFTS COLLEGE, Sept. 19, 1895.

REPORT OF THE BROMFIELD-PEARSON
SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

To the President :

During the year just closed the teaching force of the school has been chiefly employed in giving the required instruction in Drawing and Shop Work to the engineering department of the College. Twenty-seven Freshmen, thirty-eight Sophomores, twelve Juniors, and one Senior, making a total of seventy-eight, have received instruction in the Department of Drawing. Instruction in the several courses of Shop Work have been given by Mr. Furbish to twenty-eight Freshmen, thirty-three Sophomores, and eleven Juniors. This makes a total of seventy-two Engineering students pursuing studies at the school.

Seven students entered for the special courses of the school, six pursuing the same for the year. These last courses, which include the preparatory and special Engineering Course, constitute the most important phase of the future work of the school. They are not only unique, and likely to attract many desirable students who may not be fully prepared to enter the College, but they are destined to contribute largely to the growth of the engineering department by interesting men in, and preparing them for, the more extended courses of the College. On this basis, however, the success of the school will result in an almost complete change of membership annually. For the present at least, and until the special work of the institution shall become known, this annual loss of membership will have to be made good by judicious advertising.

The work of the special students during the past year is deserving of much commendation by reason of the excellence

and amount of the same. Besides the regular prescribed studies, the students have made an excellent power test of our engine and machinery, a test of the engines of the East Boston Dry Dock Company, and assisted in a test at the Narragansett Electric Light Company, Providence.

The equipment of the shops has been somewhat increased and improved during the year. The completion of the Moulding Shop will enable the course in Pattern Making to be developed on as broad lines as may be desired. We have received from the Brown and Sharpe Manufacturing Company and the Providence Steam Engine Company, both of Providence, a considerable number of valuable patterns, which, together with those made by our classes, will provide us with the necessary patterns for the moulding course. The Machine Shop equipment is yet to come. The vises, files, etc., required for the course in Bench Work, were purchased last February, and a class of eleven Juniors began the work, but the hours were reduced one half by reason of the lack of machine tools necessary to complete the course. The Junior class of next year will, however, be a large one, and the full course required. This will necessitate the complete equipment which should be in readiness by the first of March.

The third story of the building has been supplied with additional radiators and piping in order to satisfactorily heat the same. Special valves and piping have also been furnished to enable us to use our exhaust steam for heating purposes. This, together with the covering of our steam pipes, has somewhat lessened the consumption of coal. Lockers for the shops have been found necessary, and will be constructed during the fall. The equipment of the drafting room on the first story will be completed by the addition of modern tables now in process of construction.

Respectfully submitted,

GARDNER C. ANTHONY, *Dean.*

TUFTS COLLEGE, Sept. 19, 1895.

THE GODDARD GYMNASIUM.

REPORT OF THE GODDARD GYMNASIUM.

To the President :

The Director of the Gymnasium begs to submit the following report : —

During the past year, one hundred and eighteen men have taken the prescribed course in physical training. Of these fifty-seven were Sophomores and sixty-one Freshmen. Mr. Hewitt, assisted by Mr. Ryder, taught the Freshmen. Their work consisted of free movements, a wand drill, and simple exercises upon the vaulting horse, vaulting bar, and suspended parallel bars. Considerable attention also has been given to running and medicine ball exercise. The Freshmen met the assistant three times each week from the middle of November to the middle of March.

The Sophomores have been taught by the Director three hours each week, during the period covered by the Freshman work in physical training. The Sophomores have had free movements, a dumb-bell exercise, and exercises upon the vaulting bar, parallel bars, and horse. For work upon the fixed apparatus, Mr. Hewitt has had charge of one squad of Sophomores, while the Director led the other. Several upper class men have taken this course with the Sophomores.

F. W. DURKEE,

Director of the Goddard Gymnasium.

TUFTS COLLEGE, Sept. 19, 1895.

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ANNUAL REPORT

OF THE

PRESIDENT

OF

TUFTS COLLEGE

1895-96.



BOSTON:
THE BARTA PRESS,
1896.

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Tufts College.

PRESIDENT'S REPORT.

1895-96.

To the Honorable and Reverend the Trustees of Tufts College:

GENTLEMEN: The President of the College has the honor to submit the following report for the academic year 1895-96, namely, from September 19, 1895, to September 17, 1896.

In my last annual report I was called upon to record the death of the Rev. A. A. Miner, D. D., LL.D., who not only held the office of President for nearly thirteen years, but whose active interest in behalf of the development of the College dated almost from its very beginning. This year I am compelled to mention the death of one who was not only an associate of Dr. Miner throughout his whole career, but an intimate friend and coadjutor of Hosea Ballou, 2d, D. D., the first President, at a time when the College was only a dream. Although Dr. Paige did not become a member of the Board of Trustees until 1859, he was prominent in all the councils that related to the establishment of the College and was associated upon a committee with Dr. Ballou to frame the first curriculum of study. His affectionate interest in this important educational instrumentality never wavered. He made contribution as he was able to its financial needs, leaving it a substantial bequest in his will; he fostered the growth of the library by donations of books; he was constant in his attendance upon his duties as a trustee so long as strength permitted, and for nearly fifteen years he filled the office of secretary with that painstaking fidelity which was characteristic of him in all the relations of life. Although he had

reached the rare limit of ninety-four years, yet to the very end his intelligence was so clear, his interest in current things so keen, and his devotion to the College so sincere, that we cannot help feeling a sense of genuine loss in his decease.

Appointments have been made in the teaching force of the College as follows:—

CHARLES ST. CLAIR WADE, A. M.,
Assistant Professor of Greek.

CHARLES G. CUMSTON, M. D.,
Assistant Professor of Surgical Pathology.

F. M. BRIGGS, M. D.,
Assistant Professor of Clinical Surgery.

The following reappointments for the year have been made:—

FRANK E. SANBORN, S. B., *Instructor in Mechanical Engineering.*

EDWIN A. START, A. M., *Instructor in History.*

FRANK T. DANIELS, A. M. B., *Instructor in Engineering.*

THOMAS WHITEMORE, A. B., *Instructor in English.*

JOHN E. BUCHER, A. C., PH. D., *Instructor in Organic Chemistry.*

FRANK B. BROWN, M. D., *Instructor in Bacteriology and Assistant in Pathology.*

ALBERT E. ROGERS, M. D., *Instructor in Materia Medica.*

THOMAS A. MIGHILL, A. B., PH. D., *Assistant in Organic Chemistry.*

CHARLES C. STROUD, A. B., *Instructor in Physical Training.*

WILLIAM R. WOODBURY, A. B., M. D., *Lecturer on Hygiene and Clinical Instructor in Nervous Diseases, also Medical Director of the Gymnasium.*

WILLIAM A. WHITE, M. D., *Lecturer on Children's Diseases.*

GEORGE A. WEBSTER, M. D., *Lecturer on Otology.*

WALTER J. OTIS, M. D., *Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., *Lecturer on Laryngology.*

FRED. S. RADDIN, M. D., *Lecturer on Genito-Urinary Surgery.*

EDWARD E. THORPE, M. D., *Lecturer on Medical Chemistry and Toxicology.*

VIRGIL L. LEIGHTON, A. M., *Assistant in Qualitative Analysis and Assaying.*

JOHN W. EDWARDS, S. B., *Assistant in General Chemistry.*

OLIVE F. MOAKLER, *Instructor in Physical Training for Women.*

ORLANDO F. LEWIS, A. M., *Assistant in Modern Languages.*

GEORGE A. BATES, D. D. S., *Lecturer on Histology.*

HERBERT E. CUSHMAN, A. M., *Assistant in Philosophy.*

E. CHANNING STOWELL, M. D., *Instructor in Children's Diseases.*

CHARLES D. KNOWLTON, M. D., *Demonstrator of Anatomy.*

J. C. D. CLARK, M. D., *Assistant in Theory and Practice of Medicine.*

HOWARD S. DEARING, M. D., *Assistant in Clinical Medicine.*

HERBERT N. WHITE, M. D., *Assistant in Clinical Medicine.*

JOHN I. FRENCH, M. D., *Assistant in Materia Medica and Therapeutics.*

THOMAS F. GREEN, M. D., *Assistant Demonstrator of Anatomy.*

PATRICK F. KELLEHER, M. D., *Prosector of Anatomy.*

The following new appointments for one year have been made:—

FRANK G. WREN, A. B., *Walker Special Instructor in Mathematics.*

HARRY GRAY CHASE, B. E. E., *Instructor in Engineering.*

SAMUEL C. EARLE, A. M., *Instructor in French and Teacher in the Bromfield-Pearson School.*

THEODORE HOUGH, PH. D., *Instructor in Physiology.*

EDGAR GARCEAU, M. D., *Clinical Instructor in Gynæcology.*

CHARLES G. JORDAN, A. B., *Tutor in Mathematics and Teacher in the Bromfield-Pearson School.*

CHARLES S. CHASE, S. B., *Instructor in the Bromfield-Pearson School.*

The College has experienced a loss in its teaching force by the election of Frank P. Graves, Ph. D., to the Presidency of the University of Wyoming. Dr. Graves came to Tufts immediately on taking his Master's degree at Columbia University as an instructor in Greek. On account of his brilliant attainments and unusual success in teaching he was rapidly advanced, and for several years past held the professorship of

Classical Philology. We were very sorry to part with him, but his imperative summons to a more responsible position as the head of a growing Western university left us no alternative. In casting about for some one to take up the work previously assigned to Professor Graves, the Trustees felt that Charles St. Clair Wade, A. M., who has been for some time an instructor in Modern Languages, had already proved his quality as a teacher, and that he had many of the attainments requisite in a teacher of Greek. Accordingly he was elected Assistant Professor of that subject.

The College is also forced to regret the loss occasioned by the resignation of Anson B. Curtis, Ph. D., Professor of Hebrew and Old Testament. Professor Curtis is not only an accurate scholar in the Hebrew language, but a man who has carried his researches into many departments and has already won high repute in the world of letters and learning. The work which he has accomplished is both a credit to himself and an honor to the College. His resignation is all the more to be regretted because it was rendered necessary by the financial necessities of the College.

The total number of students admitted to the College in all departments is two hundred and forty-seven. They are distributed as follows : —

COLLEGE OF LETTERS: —

Graduate	6
Sophomore	1
Freshman	88
Special	12
	107
Divinity School	10
Medical School	117
Bromfield-Pearson School	13
	140
	247

The whole number of students enrolled in the College in all

departments is four hundred and seventy-nine, distributed as follows:—

College of Letters:—

Graduate	7
Senior	37
Junior	39
Sophomore	60
Freshman	88
Special	19
	250

Divinity School:—

Senior	9
Middle	16
Junior	9
Sub-junior	4
Special	3
	41

Medical School:—

Senior	38
Middle	49
Freshman	74
Special	13
	174

Bromfield-Pearson School	14
	14

Total number of students	479
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There has been some increase in the number of women, — ninety-six as against seventy-two last year. They are distributed as follows:—

College of Letters:—

Graduate	1
Senior	6
Junior	7
Sophomore	12
Freshman	18
Special	12
	56

Divinity School:—

Middle	4
Junior	2
Sub-junior	1
Special	3
	10

Medical School:—

Senior	6
Middle	6
Freshman	12
Special	6
	30
Total number of women students	96

The whole number of degrees given in course at the last annual Commencement was seventy-six, distributed as follows:—

Bachelor of Arts	26
Bachelor of Science:—	
In Civil Engineering	1
In Electrical Engineering	10
Bachelor of Divinity	4
Doctor of Medicine	32
Master of Arts	3
Total number of degrees in course	76

Of those upon whom the degree of Bachelor of Arts was conferred, six were women, all of whom entered as Freshmen, and received their entire instruction in Tufts College. It is proper, therefore, after four years from the first admission of women on equal terms with men, to make some report of the results produced by this change in the policy of the College. Speaking negatively I am constrained to say that the admission of women has not had a tendency to reduce the number of men entering the different departments. On the contrary,

there has been a constant and steady, and in some departments a very marked increase in the attendance of men. The presence of women, moreover, has not diminished the interest in the activities or sports which are supposed to belong peculiarly to men's colleges. There has been no friction arising from their presence in the class-room, and they have not increased materially the difficulties of administration. On the positive side it may be said that their work has been as well done as the work of the men. The general testimony of the teachers is that they have raised the tone of the class-room and quickened the serious efforts of student life. Their presence also has brought an element into the social atmosphere of the College, which is very agreeable and very wholesome. The Medical School has been coeducational from the start. Women have shown excellent capacity for medical training. The teachers, moreover, assert that they have found no embarrassment from the presence of both sexes in the lecture rooms and laboratories.

During the last twenty years there has been a considerable modification in the requirements for admission to college. The constant tendency has been to increase the number and variety of subjects which are recognized as proper fitting subjects. This is true of all the colleges of New England and the entire country. In none of the higher institutions has the movement been more marked than with us. In 1875 there existed in Tufts College a course of study of two years, made up entirely of English subjects, for which the degree of B. Ph. was given. In 1876 the length of this course was increased to four years. The requirements for admission to it were made the same as to the ordinary A. B. course, except Greek. Although the requirements were thus distinctly less than for the more favored traditional course, although students came into the College by means of it with an inferior preparation; and although it was regarded by the teaching body as less serious and dignified, the fact soon began to be manifest that

some of the ablest and most conscientious students of the College were pursuing that course and receiving their training under it. A further observation also showed that there was in after life little, if any, perceptible distinction between the holders of this degree and the Bachelors of Arts in scholarly attainments and intellectual power. In view of these facts, the governing board was led to believe that a course without Greek, having a high requirement in Modern Languages in which the time element of preparation should be the equal of the time element of preparation in Greek, and for which the same degree should be given, would meet a want and render a real service in education. The tender which was thus made to the secondary schools was instantly accepted. A goodly number of pupils, candidates for A. B., have come into the College by the way of Latin and Modern Languages. They have shown excellent capacity for work, and in those cases where Greek has been begun after entering college (for which provision has also been made) the quality and degree of attainment has not been inferior to that made by those who had received their preparation in that subject before entering college. Although we were the first of the New England colleges to put the modern languages on the same footing as Greek, some of the other institutions have already taken a similar step, and it is not unlikely that more, if not, indeed, the greater number, will ere long do likewise.

It is but fair to say, however, that this modification, important and radical as it is, of an ancient demand of the colleges and universities, does not, in my judgment, begin to meet the popular wishes or serve the higher needs of education in our time. Antiquity can furnish many things that are important and valuable, and, to some extent, indispensable to the vital necessities of man in every age. But it cannot furnish everything that is essential in the modern world. The life of to-day is inconceivably more varied than that of any previous epoch. The people demand an education suited to their

varied experiences, and they have already set about to secure it. The public high school is an instrumentality which the people themselves have devised to give the better sort of training to their children and fit them for the responsible places they are to fill in the world. In developing the high school they have not sought direction, as some may think they ought to have done from the colleges. It has been said recently that the high school has grown up without any reference to the college. This may be true of its present attitude, but it was not so in the beginning in Massachusetts. The statute making provision for the high school looks directly to preparation for college; and if the high school has drifted away from the college, it is because the people's sense of need has carried them over different ways from that which the college has prescribed. At all events, the fact is that of the two hundred and thirty high schools in the State only about ten per cent regularly send pupils to college, and even in those schools only a small percentage of the graduates find their way to college. This is a state of things that is radically wrong. Certainly the colleges are not fulfilling their functions as related to the great system of education in the country unless they can bring themselves into more vital contact with the great popular instruments of education.

No class of persons in the community appear to be more profoundly impressed with the situation and its needs than the broad-minded and progressive masters of high schools, especially the masters of English high schools, or those in which the non-classical courses predominate. Every year they are aware that they are turning out a product of young scholars who would be inconceivably benefited by a broader, higher, and more liberal training, fitted by the thorough and substantial manner in which their high school work has been done, to take up and pursue with profit the more serious studies in some of the manifold departments with which nearly all the New England colleges are now equipped. They

are holding out their hands beseechingly to the colleges, calling upon them to rise up to meet the new demand of the new education in these new times. The investigations of the "Committee of Ten" found this to be the situation throughout the country. The sample programs which they have set indicate that, in their belief, not only would the superior education receive no detriment, but that its true aims would be conserved and promoted if the colleges would recognize the principle of equivalents in the preparation for college as they have done already within their own peculiar province. In this way they could largely increase the body of educated persons in the community without in the least diminishing the standard of attainment. Moreover, they would perform a service for the high schools by helping them to a better organization of their work, by setting before them definite measures of attainment, by discouraging superficiality, by giving them a model of the best and most scientific methods, and, above all, by not only transforming the subjects now taught in the high schools into proper preparatory subjects, but by making them in the best sense finishing subjects for those who are obliged to stop either in the middle or at the end of their high school course. At a recent meeting of the Association of Colleges and Preparatory Schools in New England, after a thorough and prolonged discussion, in which programs of study that are easily within the possibility of well-organized high schools were presented, it was resolved without dissent that the time had come for the New England colleges to broaden the options in their requirements for admission, and that steps should be taken immediately to bring about this result. For myself, I have long been of this opinion. I have accepted the doctrine of equivalency in education with all its logical results, and I think the Faculty of Tufts College are in substantial agreement with me. For some months a committee of the Faculty has had this matter under consideration, and is now nearly ready to report a

scheme of optional requirements which will conform substantially with the vote of the association above mentioned.*

An important change has been effected in the administration of the Medical School. When the School was established a contract was made with seven gentlemen, constituting at that time the main body of the Faculty, to carry it on for three years. That contract expired by limitation of time with the beginning of the current month. Experience has shown in these three years that there is an ample field for such a school in the city of Boston. A great deal of sentiment favorable to it has been disclosed among medical men. A constantly increasing amount of clinical material has been placed at its disposal. The student body has increased in numbers and improved in quality. No serious difficulty has been found in inducing eminent specialists to accept appointments upon the teaching staff. The success attained is most encouraging, and the outlook for the future exceedingly hopeful. The College, therefore, has decided to assume the entire management and responsibility of the undertaking. Several efforts were made during the winter to find and purchase a building for permanent quarters, but they were without avail. At length a bargain was made for a piece of property on the corner of Shawmut Avenue and Rutland Street, but too late in the season to get possession and prepare it at the opening of the school year. Accordingly, a temporary lease has been taken of the old Chauncy Hall school building, on Boylston Street, and the School will occupy that until the new property is put in condition for use. With the exercise of a proper amount of prudence and good judgment, there does not seem to be a doubt that the Medical School will have a permanent success.

Beginning with the current year, the course of study leading

* Since the above report was submitted the report of the committee of the Faculty has been made and adopted. The report will be found among the supplementary documents of this pamphlet.

to the degree of M. D. has been lengthened from three years to four years, thus bringing the School into conformity with the leading medical schools of the country. This step may reduce the number of students entering, but it is thought that the effect will not be to diminish ultimately the number in attendance.

Nearly every department of the College has been worked to its full capacity. Indeed, many departments have had demands made upon them which they were unable to meet. The detailed report which follows indicates the work done, and in general the condition and needs of each branch of instruction.

Latin. — The Freshmen read the twenty-first book of Livy, Cicero's Cato Major, and the Odes of Horace. They also had one exercise a week in Latin Composition, and one in Roman History and Antiquities. The Sophomores read the Satires of Horace, the first book of Cicero's Tusculans, and the Germania and Agricola of Tacitus, and did some extra work in Latin composition. The Juniors and Seniors, forming one class, read Cicero's De Officiis, the Menæchmi of Plautus and Catullus.

Greek. — With Dr. Schneider, four Juniors elected Greek, reciting three times a week. The text-books were: Æschylus' Prometheus, Theocritus' Idyls, Plato's Symposium, and for sight reading, Lucian's Dialogues, and Tyler's Greek Lyrics. Several lectures were given to the class with reference to the subject matter of the Dialogue (Symposium). Two Seniors elected Greek, reciting three times a week during the year. Text-books: Pindar's Odes, Aristotle's Ethics, and Plato's Republic. The Ethics of Aristotle furnished a number of subjects for discussion, and the same may be said with regard to the contents of the Republic of Plato. The text-book for sight reading with the Seniors was Xenophon's Hellenica.

Dr. Graves conducted Greek I, which is a double subject pursued for six hours a week throughout the year. The work is strictly elementary, intended almost exclusively for those who entered college on the new course for the A. B. degree. Nearly all of those who have so entered have elected to begin Greek in college, and have made most commendable progress. Greek II is the course regularly given to the Freshmen who enter with Greek, and occupies three hours a week for a year. Greek III, three times a week for a year, is the course taken by those who elect to pursue the subject beyond the Freshman year. In addition to the foregoing, which may be regarded as regular courses belonging to the department, several elective courses were also given by Dr. Graves, designed for those who make Greek a major subject, or for those seeking to do advanced work in it.

Mathematics.—The work embraced more courses than in any previous year, and, on account of the resignation of Mr. Myrick at mid-year, Mr. Wren and Professor Brown assumed the whole of the teaching for the second term. Mr. Wren very cheerfully took the additional work. When, in May, the Professor was forced to abandon his work on account of illness, Mr. Wren took charge of the department and carried the work of the year successfully to completion. The Engineers and "Regulars" are in the main taught separately. This necessitates duplicating much of the work; but it cannot be avoided until the Senior year. The regular Freshmen recited in two divisions, one taught by Mr. Wren, the other by the Professor. The Freshman Engineers were taught by Mr. Myrick and Mr. Wren, Mr. Wren teaching the whole of the class after Mr. Myrick withdrew. Mr. Wren taught the Sophomore Engineers in Calculus. The Professor taught them the first term in Analytic Geometry. The Senior Engineers had two regulars with them in the study of Differential Equations for the first term. The second term they

studied Least Squares, Mr. Wren taking up the work when the Professor was obliged to leave it. The Elective class of Sophomores and Seniors in Analytic Geometry comprised eight students, five of whom took also Calculus. Fourteen students (mainly Freshmen) took the Elective course in Algebra during the second term. This class had their work carried on to the end of the year by Mr. Wren. The Professor also had an Elective class of two Seniors in Analytic Trigonometry.

Mr. Wren's work for the year with reference to term hours may be tabulated as follows:—

I. ENGINEERING STUDENTS.

Freshmen, Div. B	1st term, 6 hours
Freshmen, Div. A and B	2d term, 4 hours
Sophomores, Div. B	1st term, 5 hours
Sophomores	2d term, 3 hours
Juniors	1st term, 3 hours
Juniors	2d term, 2 hours

23

II. REGULAR STUDENTS.

Freshmen [Div. 1]	entire year	6 hours
Elective in Determinants		3 hours

9

III. BROMFIELD-PEARSON SCHOOL

6 hours

6

Total number term hours 38

Civil and Mechanical Engineering.—Beginning with the college year, the work of the Professor of Civil Engineering was a continuation with all Senior Engineers of the study of Applied Mechanics which they had begun in their Junior year, second term. The text-book of Professor Church was used as a basis, but many points were enlarged upon and new ones considered. The study was discontinued at the end of the first term. In the above study and also in Hydraulics, which all Senior Engineers begin now, the fundamental principles are

regarded as of the first importance; their practical bearing is, however, not ignored in the class-room, frequent illustrations being given of their utility, with an added interest on the part of students. But little opportunity exists at present for laboratory work in the studies mentioned, so that during the second term, problems relating to water power—measurement and development—were taken up instead of the laboratory work regularly assigned in Hydraulics. Highway Construction was begun and continued through a part of the first term, followed by Railroad Engineering until the end of the year. In the second term all Junior Engineers pursued the study of Applied Mechanics. The Civils began and continued the study of Construction in Masonry. They also had instruction in Design. Two Senior Electricals took up the study of Steam Engineering as an extra elective.

Mechanical Drawing, with Mr. Daniels, was the usual work of the Freshman year, designed to teach the careful use of instruments and the principles of projection. All parts of the processes of tracing and blue-printing were also developed. The chief point of difference between this year's work and that hitherto done was in cutting down the amount required in projection. This was safely done because of the thorough course in Descriptive Geometry which followed. The result was a considerable saving of time, which was applied, late in the course, to Elementary Machine Drawing, a part of the regular Sophomore work being thus anticipated. Freehand Lettering ran parallel with the Mechanical Drawing during the first term. For the first time the students used printed text. Examinations upon fundamental principles as well as the actual manual work were required. Gratifying results were obtained, though two periods per week could be given profitably to the work.

Sophomore Surveying is an elementary course of two periods per week for a term. It was taken by twenty-three students, one division of whom was taught by Mr. Wren. The field

work consists of four distinct parts : use of chain alone ; use of magnetic compass ; use of transit ; use of level. The field operations were accompanied by plotting from the students' own notes, and were supplemented by lectures upon the use of instruments in combination for topographical work that time does not allow to be done in the field. Text-book work was taken up when the season forbade instrumental work. Its scope is the same as that described for field operations. A large number of problems was given out for solution, with special reference to methodical arrangement of work. It is believed that this course has proved itself of such value as to justify fully its introduction, two years ago, as a required subject for all students in the engineering department.

All Juniors in the Civil Engineering course are required to take Topography for the year, two periods a week during the first term, and three during the second term. It was done by nine students, — by seven regularly and by two through special arrangement. This class began a systematic topographical survey of the College grounds, the plan being to divide them into sections, each one to be completely surveyed and mapped by a class. The transit-stadia method is used principally, though the plane table is introduced during this year. The drawing included the application of colors in plans, complete sets of topographical symbols in both pen and color renderings, and plotting of contours from stadia readings and from corner heights. Careful computations in areas, grades, and excavations were also made.

The courses in Surveying and Drawing for Seniors were taken by students doing the work of the Civil Engineering course. The surveying is railroad work — location of line, fixing grades, and running curves — and is given twice a week during the first term. The drawing is given twice a week for the year, and consists partly of topographical work and partly of stereotomy. The subject of Bridges and Roofs was taken by two Seniors of the civil course. Both analytical and

graphical methods were studied. Only two periods a week during the second term are devoted to this work, the scope of which is the consideration of the common types of roof and bridge trusses, the stresses being determined for both static and moving loads, and for wind pressure. Time does not permit much work in practical design.

The instructor in Mechanical Engineering, Mr. Sanborn, had during the first term these classes: the Junior Engineers, nineteen men, three times a week in Steam; the Sophomore Engineers, twenty-five men in two divisions, twice a week with each section in Elements of Mechanism; the Sophomore Engineers, nineteen men in two divisions, four hours a week with each section in Drawing. During the second term he had: Junior Engineers, four men, with three of whom the subject was elective, three times a week in Thermodynamics; Freshmen Engineers, thirty-eight men, three times a week in Mechanics; Sophomore Engineers, six hours a week in the Physical Laboratory, acting as assistant to Mr. H. G. Chase.

The following tabular view exhibits the work in drawing and shop work in charge of Professor Anthony:—

	<i>First Term.</i>	<i>Second Term.</i>
Freehand Drawing.	{ 29 Freshmen. 2 Sophomores. 12 Bromfield-Pearson.	
Lettering.	{ 32 Freshmen. 2 Sophomores. 10 Bromfield-Pearson.	
Elementary Mechanical Drawing.	{ 27 Freshmen. 2 Sophomores. 12 Bromfield-Pearson.	26 Freshmen. 2 Sophomores. 10 Bromfield-Pearson.
Special Drawing.	{ 2 Sophomores. 5 Freshmen. 2 Specials.	3 Freshmen. 1 Special.
Elementary Machine Drawing and Kinematics.	{ 18 Sophomores.	18 Sophomores.

	<i>First Term.</i>	<i>Second Term.</i>
Elements of Mechanism.	{ 17 Sophomores. 7 Juniors. 1 Special.	
Advanced Machine Drawing and Design.	{ 15 Juniors. 1 Special.	12 Juniors. 1 Bromfield-Pearson.
Senior Drawing and Design.	{ 10 Seniors.	10 Seniors.
Descriptive Geometry.	{	29 Freshmen. 4 Sophomores. 2 Seniors. 5 Bromfield-Pearson.
Carpentry and Turning.	{ 31 Freshmen. 3 Sophomores. 6 Bromfield-Pearson.	
Pattern Making and Moulding.	{	26 Freshmen. 3 Sophomores. 4 Bromfield-Pearson.
Forging.	{	2 Freshmen. 21 Sophomores. 2 Juniors.
Machine work.	{	1 Special. 12 Juniors.

The course in Freehand Drawing was conducted by Professor Anthony, two hours a week during the first term being given to the subject. One half of this time was devoted to model drawing, and the other half to technical sketching. The former will, hereafter, be required for admission to the engineering department, and thus enable the latter to be raised to its proper grade. During the second term the Sophomore class pursued the regular course in Gearing, four hours per week being allotted the course. The Junior Electrical and Mechanical Engineers received instruction in advanced Machine Drawing and Design from Professor Anthony. The course was continued during the year, an average of five hours a week being required. The work of the Senior class in the department of drawing was specially commendable, and included the designs, general drawings, and details for a two

and three-phase alternator, and the details for a Mordey alternator. The class also furnished proposal drawings for a one-hundred-and-fifty light machine, which it is proposed to build during the coming year. The Junior and Senior Civil Engineering Drawing is carried on in connection with the work of that department.

The instruction in Descriptive Geometry was given by Professor Anthony and Mr. Daniels. The printing of lithographed plates specially prepared for this class materially assisted the development of the new methods recently adopted. While this course is primarily intended for the engineering courses, it is gratifying to note that its importance is being recognized by the departments of science and mathematics, students in these courses electing the subject. Four hours a week during the second term are required for the course.

The classes in Carpentry, Turning, Pattern Making, and Moulding were instructed by Mr. Furbish. The course is now completed during the Freshman year, and requires about one hundred and fifty hours' work on the part of the students. Special stress is now being laid on the educational rather than the practical value of this and other shop courses. The course in Forging, under Mr. Furbish, was not materially changed from that of the preceding year. Ninety hours of work is now required from each student, and more time must be given the subject if the student is unable to construct the required number of pieces.

The course in Chipping, Filing, and Machine Work was conducted by Mr. Goudey. Six hours a week for the second term are required of the Junior Electrical and Mechanical Engineers. The equipment of lathes, planer, shaper, drill, and milling machine, with which the department was supplied last winter, made possible our first complete course in machine work. As a part of the course, the class constructed a set of models which are of much practical value in connection with the class for technical sketching.

Electrical Engineering.—Under the direction of Professor Hooper, the Senior class in Electrical Engineering read during the year both volumes of Fleming's *Alternate Current Transformer* and Thompson's treatise on *Polyphase Electric Currents*. The relations of inductance, capacity, and resistance, the mathematical theory of mutually inductive circuits, and the dynamical theory of current induction were treated with especial care. One of the class, a candidate for honors, read the treatise on *Alternating Currents* by Bedell and Crehore, and a class of two read *Magnetic Induction in iron and other metals*, by Ewing. As a partial substitute for regular work in the laboratory, six of the class constructed a ten-kilowatt alternator with armatures for two-phase and three-phase currents. Similarly two other students constructed a clutch for the Mordey alternator, and so far completed that machine as to enable current to be taken from it. Another did considerable work on the large electro-dynamometer and used that instrument in connection with the Kelvin centiampere balance. During the first term the Junior Engineers, under Mr. Myrick, read Thompson's *Elementary Lessons in Electricity and Magnetism* and studied the elementary theory of electrical measurement in connection with practical work in the laboratory. During the second term the same class, under Professor Hooper, continued their work in the laboratory and met twice a week for lectures and electrical calculations. This class also read Thompson's treatise on *Dynamo-Electric Machinery*, reciting three times a week. During the second term the Sophomore class in Engineering, under the direction of Mr. Chase, assisted by Mr. Sanborn, worked in the laboratory three periods a week on experiments in mechanics, sound, light, and heat. An elective class of regular students also studied electricity and magnetism with Mr. Chase, reciting three times a week during the second term.

At mid-year there were turned over to Professor Anthony, for the use in the Bromfield-Pearson Building, tools and

machines belonging to the electrical department valued at \$1,254.45.

Physics. — The class in Physics I was carried through the year, the class numbering sixty-five in all.

There was a class of thirteen in Astronomy the first term. A class of seventeen attended a course of lectures on higher physics the second term. During the month of March the Professor was absent abroad, and Professor Hooper took charge of Physics I.

There is nothing to report in the way of added conveniences for securing interest in the department. In former reports for a good many years the needs, not the wants, of the department have been emphasized.

Two or three years ago Physics I had a sudden phenomenal growth, the class being over seventy in number. It was thought to be but a temporary condition, but last year there were sixty-five, and this year the same class promises to be even larger. There is no room in the College where such a number can be properly accommodated for convenience of taking notes and for examinations. Even half that number is too many for the latter purpose. The condition of affairs of this department is more serious than in any other part of the institution. The lecture room has had the back seats raised so that the occupants can see the instructor and the experiments upon the table, which they could not do so long as the seats were all on the same level; but this arrangement destroys the blackboard service, and other rooms must be found for classes which need such convenience and have hitherto used that room. That will crowd other rooms, but there seemed no help for it.

Moreover, what is more needed than accommodation for a large class is a physical laboratory adapted to investigations. No work can be done in the present condition of affairs for lack of apartments and apparatus. Not less than five thou-

sand dollars' worth of apparatus is needed to bring the department to a condition so that it can compare with the other New England colleges.

Chemistry.—The advanced course in charge of Professor Michael on Organic Chemistry was taken by four post-graduate students, and was continued through the year. Dr. Bucher gave a course of lectures on Organic Chemistry, which was attended by ten students, and also conducted a course on Scientific German, as noted elsewhere in this report, which was elected by five students. In the organic laboratory four graduates and one undergraduate worked through the year. Dr. Higbee had charge of the quantitative laboratory, where seven students pursued a course of quantitative analysis, and also had charge of a class of two students in Gas Analysis. The new course on Fire Assay was under supervision of Mr. Leighton, and was taken by seven students. The following researches were completed during the past year (of these, however, only the first four titles have as yet appeared in print):—

1. A. Michael: On the Addition of Alkyl and Hydrogen to unsaturated Esters.

2. A. Michael: On Addition-processes with Sodium Acet-acetic Ester and Sodiumnitroalkanes.

3. A. Michael and J. E. Bucher: Action of Acetic Anhydride on Acids of the Acetylene Series.

4. A. Michael and J. E. Bucher: On Oxalacetic Acid.

5. A. Michael and H. Higbee: On a New Synthesis of Triazolderivatives.

6. A. Michael and T. A. Mighill: On the Addition of Bromine to Tetrolic Acid.

7. A. Michael and T. A. Mighill: On the relative Rates of Debromination among Alkylene Bromides.

Fifty-three students were enrolled for Chemistry I. Assistant Professor Durkee met them throughout the year for lectures, twice one week, and once the following week. These

students were separated for laboratory work into four divisions. Each division met twice during the week when there was but one lecture. When there were two lectures in a week, each laboratory division met once. The laboratory periods have been two hours in length. In connection with the lectures, Remsen's Inorganic Chemistry has been used, and the manual of Assistant Professor Durkee for experimental work in the laboratory. During the first term Chemistry II was given six hours a week to nine students. Eight students took Chemistry III, the second term, six hours a week. The work of the students in Chemistry II and III has been more satisfactory than usual in quality and quantity. In all of the above-mentioned courses Messrs. Edwards and Leighton have helped to distribute the apparatus, and have attended to the solutions and chemicals used in Chemistry I.

In the July number of the *American Chemical Journal*, Assistant Professor Durkee published his work upon Oxidation of Sodium Sulphide and Hydrosulphide to the Sulphate by Electrolysis. He has also completed the work and has ready for publication an article in the December number upon the Action of Water of the Hub Coal Mine upon Cast Iron.

The West End Street Railway has presented the Chemical department a storage battery of ten cells.

Biology.—Thirty-eight students worked in this department. With the beginning of the new Science Courses it was deemed advisable to arrange two courses of work covering the subject of Elementary Biology. One of these, running through the year, was intended for those who elected their year of required science in this department; the other course, running through two years, covers essentially the same ground, but in a much more thorough manner. This is intended for B. S. men and also for the A. B. and Ph B. students who elect biology as a major. Each course consists of two lectures and

four hours of laboratory work each week. The experience of a year has been such as to warrant the continuance of these courses, although they add materially to the labor of instruction.

In the one-year course (Biology I) twenty students began of whom fifteen received passing marks at the end of the year. In the two-year course (Biology II) fourteen students began, and eleven were passed at the end of the year. In the more advanced laboratory work (six hours a week) there were eleven students in the first and ten in the second term. In the first term the Professor gave also two lectures a week upon morphological questions, the course being intended for advanced students. This course had an enrolment of eight. In the second term the same time was occupied by a course of lectures upon vertebrate embryology, with the same number of students. In the spring term the Professor also had a class, by arrangement with Professor Fay, in Biological German. As this was designed primarily for those major students who eventually intend to study medicine, the work chosen for reading was Hertwig's *Entwicklungsgeschichte des Menschen und der Wirbelthiere*. Two hours a week were occupied with this, and seven students took the work.

Mr. Lambert and Mr. Winslow, fellows in this department, worked well during the year, and each has a piece of investigation nearly ready for publication. Mr. Lambert also assisted in the laboratory work in connection with Biology I, and no one could have succeeded better than he. His assistance was very valuable and gave evidence of ability as a demonstrator. Mr. Lambert, having occupied the fellowship for the statutory two years, is not eligible for re-election. Mr. Winslow was re-elected, and for the second fellowship Miss Elizabeth Shaw, a graduate of Smith College, was appointed. She comes to us highly endorsed by the faculty of her Alma Mater.

The work done by the classes this year is of a higher character than ever before, but the numbers are such as to

render the department rather crowded, notwithstanding the addition to the Barnum Museum.

Little has been added to the permanent equipment of the department during the year. A few tables have been built, some glassware, etc., bought, and the laboratory supplies have been kept up.

The departmental library has prospered. The accessions of the year numbered five hundred and ten, forty-four of these being volumes and four hundred and sixty-six parts of serials and pamphlets. Of these, eighty-one were received by purchase, one hundred and sixty in exchange for Tufts College Studies; one hundred and nineteen in exchange for duplicates; ten by transfer from the College Library; and the remainder by donation from the following: F. Schaudinn, one; United States Fish Commission, one; United States National Museum, one; Rev. Anson Titus, one. No books have been bound during the year.

One number of the Tufts College Studies has been published. This contained the dissertation presented by F. C. Kenyon in application for the degree of Ph. D. It made seventy pages and was illustrated by three double plates. Several more papers are now ready or well under way, and should be published at an early date.

Geology and Mineralogy. — During the first term seventeen students elected in the department of Mineralogy. Instruction was given in Blowpipe Analysis of minerals. Each student was provided with the necessary reagents and became by practice acquainted with the most important minerals, of which there are a large number and variety of specimens on the shelves of the cases in the mineralogical work room. In the latter stage of the course, the quantitative analysis of gold and silver ores is made a specialty. A delicate assay balance and other apparatus necessary for this purpose are provided.

In the second term, the study of Geology is pursued with

the use of text-book and lectures. A large collection of rock specimens and fossils is contained in the cases of the lecture room and will be accessible to the students for study.

During the past year sixteen students elected in the department of Mineralogy and Geology.

Modern Languages. — The principal changes that have signalized the past year in this department are the devolving of part of the work of instruction in German upon an assistant, and the creation of classes in scientific German under the charge of the departments of Chemistry and Biology.

Hitherto the entire work in this study has been carried by the Wade Professor, and the existing courses being so numerous and their demands so exacting, various supplementary ones, the desirability of which was keenly felt, have necessarily been omitted.

The choice of Mr. O. F. Lewis as an instructor in French happily furnished the opportunity for an extension of the work in one direction, besides affording a slight relief to the head of the department. Mr. Lewis's special interest in the German language and literature, in which his attainments are pre-eminent among our graduates, led him to volunteer to do certain work of instruction in this subject. German II was committed to his charge from the beginning of the year; later, at Christmas recess, when the unwieldy size (52) of the class of beginners (German I) and the widely different abilities of its members rendered a division necessary, he took the less advanced section and carried it through the remainder of the year. The new work rendered possible by his co-operation was the extension of our courses in German Composition, a kind of instruction of great importance, which has hitherto of necessity been unduly neglected.

A serious deficiency in our modern language curriculum lies in the necessity for giving instruction in German to members of the scientific courses in classes chiefly made up of

students in the courses of liberal arts. In elementary work the disadvantages are felt by both sets of students. They arise from their widely different preparation for language work. In the more advanced classes the scientific students are the chief losers, from the fact that the literary work they are doing is bringing them little, if any, nearer to the power to read German texts in their special subjects with ease and accuracy. To remedy both evils would require separate instructors for the scientific students from the beginning, as is to a considerable extent the case at present in French. The serious difficulties which beset the department from this side can never be fully remedied until the teaching force is augmented by at least one more instructor in German.

Through the zeal and kindness of Professor Kingsley and Dr. Bucher, the second of the two principal difficulties cited above has been temporarily and quite satisfactorily met, they having consented to instruct classes in the reading of German texts in their respective departments. Thus it becomes possible to direct the efforts of scientific students who have acquired a knowledge of the principal facts of the language and some facility in reading ordinary German to classes in which they may attain the ability to employ the language as an instrument in their special studies. A similar opportunity for civil engineers seems a desideratum.

During the year the Department of Modern Languages has given instruction as shown in the subjoined schedule. The work performed by Mr. Lewis and by Drs. Kingsley and Bucher is also presented.

The following is a tabular view of the work in Modern Languages.

COURSES.	INSTRUCTORS.	No. in Class.	WORK DONE.
German 1.	Prof. Fay.	52	Joynes-Meissner's Grammar I. and II., with Lewis's Exercises. Im Zwieliht, II. (Until Christmas recess.)
German 1 a.	Prof. Fay.	33	Work of 1 continued.
German 1 b.	Mr. Lewis.	16	Work of 1 continued; Volkmann's Geschichten; Imensee; Höher als die Kirche.
German 2.	Mr. Lewis.	22	Das Spielmannskind; Der Stumme Rathsherr; Brigitta; Peter Schleimhl; Der Trompeter von Säckingen. Composition: J. M. Grammar III. and Continuous Exercises; eight themes.
German 3.	Prof. Fay.	20	Minna von Barnhelm; Hermann und Dorothea; Die Jungfrau von Orleans; two tales by Zschokke; Ekkehard.
German 4.	Prof. Fay.	6	Maria Stuart; Extracts from Der 30 jährige Krieg; Wallenstein; Egmont; Goetz von Berlichingen. (Twice a week.)
	Mr. Lewis.		Composition; Harris; White. (Once a week.)
German 6.	Prof. Fay.	4	Vilmar, Geschichte der deutschen Literatur (entire); extended readings from Klopstock, Herder, Wieland, and Lessing.
German 7.	Mr. Lewis.	7	Composition and Conversation. Stein's Exercises; frequent themes. (Two hours a week, first half-year.)
German A.	Prof. Fay.	1	The Philosophy of Music: Hanslik, Das Musikalisch-Schöne; Wallaschek, Die Aesthetik der Tonkunst. (First half-year.)
German B.	Prof. Fay.	1	An extended course of German poetry from Uhland, Heine, Wieland, Rückert, and Scheffel.
German C.	Prof. Kingsley.	7	Biology: Hedwig's Embryologie (350 pages).
German D.	Dr. Bucher.	5	Chemistry: About 75 pages from the Berichte and Hodges's Scientific Reader.

COURSES.	INSTRUCTORS.	No. in Class.	WORK DONE.
French 1.	Prof. Lewis.	12	Grandgent's Grammar, with College Exercises; Rollins's Reader; La Joie fait Peur; Le Cachet Rouge; La Cigale chez les Fourmis.
French 2.	Prof. Lewis and Mr. Wade.	28	Grammar and Composition: Macmillan's (Second Year), with weekly themes; a systematic vocabulary of 800 words. Translation: Le Pacte de Famine; Contes Contemporains (O'Connor); Contes et Nouvelles Modernes (Bercy); Le Gendre de M. Poirier.
French 3.	Prof. Lewis, Mr. Lewis, and Mr. Wade.	24	Seventeenth Century Drama: Esther; Mithridate; Andromaque; Phèdre; Britannicus; Polyucte; Cinna; Horace. Modern Prose: Les Origines de la France Contemporaine; Cinq-Mars.
French 4.	Prof. Fay.	17	Society in the 17th and 18th Centuries: Crane's Société française au XVII ^e Siècle; Les Précieuses Ridicules; Les Femmes Savantes. Walter's Classic French Letter-Writers. Andromaque, Cinna, Horace, Merope.
French 5.	Prof. Lewis and Mr. Wade.	10	The Romantic Movement: Lyrics of Lamartine, de Musset, and Hugo; Bug-Jargal; Selected Essays from Sainte-Beuve (Efflinger) Contemporary Prose: Bourget; Leconte's Difficult Modern French. Literary History from Rostand to Hugo (Petit de Julleville). Realism from Balzac to the present day, from various texts and authorities.
ENGINEERS. French 1.	Mr. Wade.	25	Grammar and Composition: Whitney's Short Grammar and Kimball's Exercises. La Prise de la Bastille; L'Histoire d'un Paysan; La Chute (from Les Misérables); Bug-Jargal; La Belle Nivernaise; Confessions d'un Ouvrier; Pierre et Camille.
French 2.	Mr. Lewis.	15	Colomba; Mlle. de la Seiglière; Hernani; Le Pacte de Famine; Roman d'un Jeune Homme Pauvre; Le Curé de Tours.
French 3.	Mr. Wade.	17	L'Avare; Le Tartuffe; Le Cid; Athalie; Le Joueur (Regnard); Merope; Le Testament de César Girodot.
French A.	Mr. Wade.	7	Grandgent's Grammar, with College Exercises; and Composition; Whitney's French Reader; Les Grandes Découvertes Modernes; Pierre et Camille; Fleurs de France.

History.—Two regular subjects have been treated during the year, General European History (History 1, first term; History 2, second term) and the Political and Constitutional History of the United States (History 5). In addition to these subjects the Seminary in American History (History 9) was conducted, as for the three previous years. The instructor has also devoted much time to special study and research in a field hitherto untouched by historical scholars. The enrolment was : in History 1, 32 ; History 2, 21 ; History 5, 6 ; History 9, 2. At the request of the instructor, because of lack of facilities, the work in History which in 1894-95 was made a part of the program for Juniors in the Engineering courses was taken out of that program, and the classes mentioned above were made up of students electing the subjects in the Arts, Philosophical, and Science courses.

As in previous years, the instruction in subjects 1 and 2 was by lectures, supplemented by parallel reading, and tested by frequent written exercises. In History 5, the work was less formal. A careful study was made of the principal sources and authorities of United States history, political issues and constitutional questions were brought into view in the light of their development, and an attempt was made to unite in a connected whole the varied elements of our national history. The class work consisted of talks by the instructor, discussions, and a series of carefully prepared reports, narrative, biographical, and critical, by each student. Three of the students in this class received Honorable Mention in History at their graduation in June.

Two Seniors carried on independent investigations, under the direction of the instructor in History 9. Of these, one gave the year to a careful study of Shays's Rebellion, examining a mass of manuscript material, and obtaining access to some hitherto unexamined private sources. The other took up during the first term the history of Tariff Legislation in Massachusetts from 1780 to 1789; and during the second

term the history of Lotteries in Massachusetts. In this latter study, although still incomplete, some curious and interesting results were reached.

During the past year about twenty volumes were purchased by contributions of students in history and added to the working library of the department. In addition to this, the instructor put on the shelves of the department library temporarily during the year over sixty volumes from his private library to supply deficiencies in the College library. Such makeshift arrangements, however, cannot place the department on a satisfactory permanent foundation. History and Political Science should be recognized as of first importance in the training of citizens, the instruction in them should be thoroughly co-ordinated, and provision should be made for good and adequate teaching of essential subjects within these fields.

Last year there was noticed in this report the movement, initiated by this department, to secure better teaching of history in secondary schools and to promote the closer connection of secondary schools and colleges through the recognition by the latter of thorough courses in history in the former. During the past year the movement has gained great headway through the endorsement of the Conference on College Entrance Requirements in History by a large majority in the New England Association of Colleges and Preparatory Schools, and unanimously by the Schoolmasters' Association of New York. Finally, the arrangements recommended by the Conference were in substance adopted at the Conference held in New York under the auspices of Columbia University by representatives of Harvard, Yale, Cornell, Columbia, and Princeton Universities, and the University of Pennsylvania, together with secondary school teachers from New England and the Middle States. With such support, it may be confidently believed that the movement emanating from this College less than two years ago will, in a comparatively short time, bear

fruit in a fuller recognition of the scientific value of history, and of its important place in education, not as an "information subject," but as a subject for the fuller and broader development of men and women. In view of this fact, the plea for a fuller recognition and better equipment of the historical department of the College seems all the more pertinent.

Music.—The two elementary subjects announced by the department of Music, Music 1 and Music 4, were given.

In Music 1, harmony, theoretical and practical, was the subject of study. Jadassohn's Manual was the text-book used. All the subject-matter was considered, and nearly all the exercises were written. Many exercises from other sources were dictated and written. Students were encouraged to make practical essays in the simplest forms of composition, and a few creditable results of that sort were obtained. Attention was given throughout the year to the harmonic analysis of standard compositions, and toward the end of the year very satisfactory results were obtained in this sort of treatment of several sonatas of Haydn, Mozart, and Beethoven. The class numbered fifteen, seven women and eight men. As all vocal parts were represented, it was possible to sing many of the exercises written by the class, and thus keep continually present the practical objects of the study of harmony.

In the second term a course in the History of Music (Music 4) was given. The class-room work consisted chiefly of lectures by the instructor. A general survey of the whole field, from the earliest times to the present day, was taken, but especial attention was paid the last three centuries. The well-stocked library of the department permitted reference to many excellent treatises on the subject. The class numbered eight.

English Literature and Oratory.—In the department of English Literature and Oratory the salient feature has been

the addition of new courses. In the so-called English 4 an experiment was tried in the direction of a more intimate relation between the department of English and that of Oratory. During the first term Professor Shipman met the class one hour a week, the work having reference largely to the importance of plan in spoken discourse. At another hour of the week assignments in formal debate gave the class opportunity to put knowledge into practice. During the second term, meeting one hour a week, the class assumed the form of a legislative body, and discussed bills modeled in part upon those of the State legislature. Eight students were found in the class during each term, four of whom continued the subject through the year. While it is not likely that the experiment will be repeated in the same form, the aim of still further uniting the work in English with that in Oratory will be pursued steadily by the heads of both departments.

The class studying the elements of good speaking was, as usual, divided into two parts, one, numbering sixteen, using Shakespeare's Julius Cæsar as a background for class reading, and the other, numbering twenty-two, using Bradley's selections from English and American orators. Ten advanced students elected to read selections from Shakespeare and Browning, one hour for the year. Three members of the Divinity School were added to this class for the first term, and one student from the College of Letters during the second term. The required work in Oratory was completed by eight Divinity students, meeting twice a week during the first term, and included some practice in speaking without notes.

In the effort to provide a suitable introduction to the study of special periods of English Literature, one lecture a week for the year was given, traversing in outline the whole field, from the landing of the Saxons to the death of Tennyson. Parallel reading was required and examinations held. This subject was taken by a class of forty-three, including seventeen Junior Engineers, who thus fulfilled a new requirement of their course.

Mr. Wade and Mr. Whittemore each delivered two of these lectures, and Professor Maulsby the remainder. For the first time, also, the study of American Literature was continued throughout the year, three hours a week. The literature of our own country is by no means so generally studied as its interest deserves, and in the belief that, whatever else he does not know, an American should at least be familiar with the development of the literature of his own land, it is proposed that this subject shall be presented every year, and be made to follow immediately the general view of the literature of England. Twenty-six students completed this subject, which involved much reading, occasional special reports, the memorizing of selected passages, and the preparation of three original essays.

The call for instruction in Anglo-Saxon being as loud as ever, Professor Maulsby read, during the first term, with a class of seven, the *Elene* of Cynewulf, after the necessary grammatical introduction, obtained from the study of Cook's *First Book in Old English*. A fortunate chance enabled four of the seven to read, during the second term, the whole of *Beowulf*, with Mr. Earle, whose services, it is pleasant to note, are to be retained by the College. In any mention of the substantial assistance rendered by others, the subjects offered by Mr. Whittemore and Mr. Wade must not be forgotten. The former, for the first term, continued the study of Shakespeare beyond the stopping-place of the preceding year, nine students reading aloud with him six of the plays, besides furnishing brief weekly essays and hearing the critical lectures. During the second term, Mr. Whittemore gave, for the first time, to one Senior a course in Browning, involving much collateral reading. Mr. Wade, during the second term, had four advanced students doing some excellent work in the poetry and drama of the Restoration. Especial emphasis was placed upon the dramatists, and upon Dryden as the representative of his age; also the valuable library of the instructor

was put at the disposal of the class, that acquaintance at first hand might be made with Davenant, Crowne, Lee, and the later writers of the period. It is only by such aid as was rendered by these gentlemen that any pretence can be made to cover a considerable portion of the vast field of English literature.

A course in English Versification offered for the first time was taken by five students, one hour for the year. The study of Chaucer occupied ten students during the second term, three hours a week, considerable attention being given to the linguistic side of the subject. One student, Mr. O. H. Smith, after having pursued English Literature as his major subject, continued it on the lines of graduate work. He made a special investigation to discover the fundamental qualities of so-called Romantic literature, examining the critical work upon the subject of English, French, and German writers, and trying their conclusions by his knowledge of the literature itself. His work was adjudged, by the committee appointed to examine it, worthy to be recognized with the degree of Master of Arts.

English and Philosophy. — The Professor in charge of the department desires especially to note the beginning of more systematic work in Philosophy, which, with additional teaching force, has been made a major department. Mr. Cushman's class in the History of Philosophy, three hours a week for two terms, had a total membership of fourteen, the majority of them for the entire year. The results of the year were such as to afford great encouragement. The work was conducted by lectures, with frequent examinations, by extensive reading and preparation of theses. Some students have already signified their purpose of making Philosophy their major subject, and Mr. Cushman will be able to make a beginning, although, by the dropping out of so many Seniors, only a small one, of more advanced work next year.

The work of the Professor in the same department during the year has been as follows: Ethics, with six Seniors, three hours a week for first term. Hyslop's text-book was made the basis, with much additional reading and constant discussion. Psychology, with twenty-five students, three hours a week for first term. Dewey's Psychology was the basis of class work. Logic, with twenty-five students, three hours a week for second term. Jevons's Lessons was the basis of work, supplemented by many practical exercises. Experimental Psychology, with eight students, three hours a week for the second term. The principal result of this work was to confirm the opinion that without a room and apparatus and a qualified instructor, the subject should not be given the consideration of even a half-course. The little that can be satisfactorily done under present conditions may better be included in the general subject.

In the department of English a much greater amount of work was done than in any previous year. Mr. Whittemore's classes, numbering in all one hundred students, did work amounting to seventeen term hours, and required the reading of between four and five thousand themes and compositions, in addition to his lectures, discussions, and text-book work. In detail his classes were as follows: English 2 and 3, three term hours each, first term, lectures, recitations, and examinations; second term, three themes a week, with discussion of the same and lectures. Thirty-five Sophomores and four Specials composed the class. English 5, daily themes, with seven Seniors and seven Juniors, who were not met by the instructor as a class, but individually for consultation on their work. Lectures were given throughout the year to thirty-two Freshman Engineers, who wrote two extemporaneous compositions a week in the first term and two themes a week in the second, which were discussed with the class. Sixteen Sophomore Engineers were met three times a week in the second term for lectures, readings, and examinations.

The Professor's classes in English during the year were as follows: English 1, one hour a week through the year, compositions chiefly extemporaneous, with lectures and discussions. The class numbered thirty-six, including two Special students. English 4, in conjunction with Professor Maulsby, two hours a week for first term, with nine students, of whom two were from the Divinity School. English 5, daily themes with seven students, and in this connection may be mentioned two students doing advanced essay work, but not in numbered class. English 6, with four students, three hours a week for first term.

With the present teaching force, the Professor sees no reason why English may not fairly be made a major department. An Essay course has already been announced for the next college year, and even without additional courses the eighteen term hours required in a major subject can be made up, if the count begins with English 2, as it properly may. It is believed that the study of English will be greatly advanced by the change here recommended. Mr. Whittemore fully coincides in this recommendation of Professor Shipman, which, the Professor adds, only Mr. Whittemore's noteworthy efficiency as an instructor makes practicable.

Library.—The accessions during the year have been fourteen hundred and forty-three bound volumes, ten hundred and fifty-eight pamphlets, and ten hundred and sixty-seven periodicals. Thirty-eight volumes and six hundred and twenty-eight pamphlets were by purchase, twelve hundred and ninety-seven volumes, eight hundred and sixty-two pamphlets, and three hundred and eighty-five periodicals were by donation, and twenty volumes and one hundred and ninety-six pamphlets were by exchange.

The principal donors were the estate of the late Richard Frothingham, through Thomas G. Frothingham. The gift comprised five hundred and forty-six bound volumes, besides many scarce pamphlets and periodicals. This valuable con-

tribution is a special enrichment of the library in the important field of Colonial history. Albert Metcalf has placed in the library three hundred and fifty volumes and twenty-seven pamphlets relating to the history and theory of music. He has generously given authority to the Professor of Music to purchase all books of substantial value upon that subject published in the English language. Orders have been given still further for the purchase of a large and valuable collection in languages other than English, the intention of Mr. Metcalf being to make the collection in this department of study as complete and perfect as possible. Professor Shipman has also made an important addition of thirty-nine volumes relating to Anglo-Saxon and early English.

The circulation has been less than for several years. But more books were placed upon the reserved list than ever before, and the over-night use allowed would nearly make up for the loss in general circulation. No greater benefit could be conferred upon the College than the gift of a library maintenance fund, the income of which can be steadily applied for the purchase of new books as they are needed for investigation and study in the different departments. At present many instructors are reduced to distressing shifts, in order to supply the students with the literature and information required in their respective subjects. The library is the heart of an institution of learning, and in order that it may fulfil its functions, provision must be made for the constant renewal of its vitality.

Political Science.—The President of the College has given four courses, one of which, Political Economy, is a full-year course. Two others, Ancient Law and International Law, are each one-term courses. The class in Political Economy is made up of those who elect it from the side of the College of Letters, of the Senior Engineers, and of those Divinity students in the Senior class who have not previously studied this

subject. This made the class a very large one, forty-three in all. The number of pupils present at one time rendered it impossible to use a text-book to advantage. The method employed, therefore, was largely that of lectures and the assignment of topics for special investigation. Good results, however, were obtained, and the interest continued without abatement to the end. The course in Ancient Law was continued through about two thirds of the first term, and the remainder of the time to the mid-year was occupied with a study of the Constitution of the United States. Very profitable use was made of Ex-Governor Boutwell's book on the Constitution, just published. International Law was taken up during the second term, and an unusual degree of interest was manifested in it because of the stirring nature of current events. Occasion was thus given to set forth some of the more important historic phases of the subject by pointing out their relation to the modern practices of nations.

Three students took Political Science 4. One devoted himself to the history and theory of finance, accomplishing a pretty wide range of reading and presenting a very creditable thesis. The other two devoted themselves to a survey of some of the forms of Colonial government, with a view to their bearing upon the genesis of existing forms. The instructor in History proposes for next year the addition of two other courses in Political Science, which will materially strengthen the interest in this department.

College Pulpit. — As usual, the care of the pulpit was in the hands of the President and most of the preaching was done by him. The college church is recognized by nearly all the higher institutions as presenting a serious problem. All the social conditions, which are so important a factor in the ordinary parish church, are wanting in a college community. To the student the preaching exercise has many of the same elements that are present in the exercises to which he is held

during the secular portion of the week. There is no amalgamation of interest and feeling between the student part of the congregation and that portion that is made up of persons who are outside the student body. Moreover, the students are quickened and held by what is novel and curious rather than by what is traditional and ordinary. The President, therefore, feels more and more, with the lapse of time, the importance of imparting a greater variety to the Sunday service. If only some means could be devised of bringing, in the course of the year, into the Chapel on Sunday men of established reputation and recognized intellectual and spiritual power, it would be a decided gain over the present method, and would go far to quicken and sustain the interest of students in divine worship.

The reports of professional and other departments are here with submitted.

E. H. CAPEN.

TUFTS COLLEGE,
September 17, 1896.

REPORT OF THE COMMITTEE ON
ENTRANCE REQUIREMENTS.

REPORT OF THE COMMITTEE ON ENTRANCE REQUIREMENTS.*

OCTOBER 17, 1896.

To the Faculty of Tufts College:—

GENTLEMEN: Your committee, appointed January 6, 1896, to consider and report upon a revision of the requirements for admission to the College submit the following unanimous report. In making the recommendations therein the committee have had in mind certain facts which they believe are self-evident at the present time:—

1. That the development of knowledge and of methods in certain branches of learning that were once of inferior educational value has placed these branches, when properly taught, on an equality, as regards subject-matter and method, with the subjects that were regarded as the sole standard of intellectual culture twenty-five years ago. This fact should be recognized in any scheme of liberal education that seeks to be more than mediæval. There is a genuine public demand for recognition of the subjects that have been so developed. This demand has made itself felt in public schools from the lowest to the highest, with the result that the colleges controlled by private corporations, through adherence to the old standards of a highly developed but narrow learning, are out of touch with a majority of the best secondary schools. The field of the colleges is thus needlessly limited and their possible influence for good upon the spirit of scholarship in the schools is kept in abeyance.

* This special committee, appointed January 6, 1896, reported on the seventeenth of October, and the recommendations of the report were adopted by the Faculty.

(2) That the tendency of the colleges and secondary schools of New England is toward a recognition of the unity of education and a closer association for the advancement of common interests. There is a just desire on the part of the secondary schools that the colleges should meet them half-way in encouraging the full development of the newer branches of learning which have been pressed upon the schools by growing public sentiment; which are recognized within the colleges as of the highest value; but which form a bar to the connection of school and college because the latter fails to give them recognition in its entrance requirements as suitable preparation for its work. On the side of the colleges there is a strong and growing belief that adherence to arbitrary and outgrown standards is contrary to good institutional policy and a hindrance to the interests of a broad, well-balanced education. This desire of the schools and this belief of the colleges have been voiced by nearly every important educational conference or association that has met in New England during the past two years. A movement in recognition of the changing conditions of culture, therefore, is in the line of present educational development in New England, and not against it.

(3) That Tufts College has taken a leading place in shaping the movement which has been slowly developing from the conditions noted above, and has thereby taken a position honorable to itself and respected by other institutions. The logical development of this policy of the College, the rounding out of the purposes and principles it has asserted, calls for a still more advanced position—a wider recognition of the newer branches of learning, when properly taught, as adequate preparation for the work of the College. By taking such a position it will materially advance the closer connection of secondary school and college, placing the latter on the ground that it should occupy, that of a higher stage in the process of public education, and not that of a close corporation school to

educate a few men for positions of especial sanctity, apart from the people.

(4) That the desired result can only be attained through a plan of entrance requirements having as its major part a wide range of options which may be fitted to varying school programs. The recognition of definite school programs would only substitute an arbitrary arrangement by the school for an arbitrary arrangement by the college. The plan that is to bring them together really and permanently must be flexible enough to fit itself to the requirements and circumstances of both school and college.

Having in mind these facts, the committee believe that in recommending an extended though carefully guarded scheme of options in entrance requirements, they do no violence to the sentiment either of the general public or of those who are engaged in working out the problems of education. On the contrary, they believe that their recommendations are in full harmony with that sentiment and are a rational and logical embodiment of the idea for which it stands. They believe that not only can such a plan be put in operation without any disturbance of existing conditions, but that it will coincide therewith better than do the existing requirements of the New England colleges, including Tufts; and further, that the change can be effected without any lowering of the standard of the college and with benefit to the scholarly spirit of the schools that send, or may send, students to Tufts College.

Furthermore, the modifications proposed in the subjoined recommendations make no revolutionary change in the present requirements. They substitute a slightly increased range of options for the arbitrary grouping of the present plan, with its many inconsistencies; and a perfectly simple combination, which can be adapted to the program of any good secondary school having an adequate equipment and a well-balanced course of four years, for the often impossible combinations of

the present requirements. Incidentally they make it possible to render more definite and simple the conditions of admission, and to fix with exactness the status of the admitted student — a consummation devoutly to be wished.

The committee recommend the adoption of the following requirements for admission, in the statement of which an attempt has been made to present fully the essential elements of the plan and such details in it as are new.

Requirements for Admission.

Every candidate for admission to the College of Letters as a resident student (college residence implying regular attendance at the exercises and performance of the requirements of a reasonable program of subjects in the college curriculum) is required to pass examinations in two groups of subjects, known respectively as the Primary and Secondary Groups. The Primary Group includes certain prescribed subjects in different fields, an elementary training in which is regarded as fundamental for college study. In the Secondary Group a range of options, recognizing the equivalence of different preparatory studies when properly pursued, is presented. This permits the candidate to choose the more advanced subjects to be offered as evidence of capacity in accordance with the course pursued in the preparatory school and with that which it is proposed to pursue in college.

The requirements presuppose a secondary school course of four years of systematic study, in which at least eighteen school periods a week are given to instruction in subjects to be offered as a part of the preparation for college. On this basis the *entrance unit* is taken as representing a minimum amount of time of three periods a week for one year, the full requirement being, therefore, twenty-four entrance units. The fact is recognized, however, that time estimated in this way is only an approximate indication of the amount done, and the entrance unit is held as an average, rather than as an exact,

measure. In the list of subjects for examination contained in this report the value of each one in entrance units is to be carefully determined, in view of all the conditions, so that it may be definitely given in the public announcement of the requirements for admission to the College.

Primary Group.

All candidates for admission to the College are required to pass satisfactory examinations in the following subjects, counting an aggregate of eight entrance units:—

1. *English.* Same as present requirement.
2. An elementary foreign language — *German, French, Latin, or Greek.*
3. *History.* Two of four — Greece, Rome, England, and America.
4. *Mathematics.* Arithmetic, Algebra, and Geometry.

Secondary Group.

Every candidate for admission to regular standing in the course leading to the degree of Bachelor of Arts is required to pass satisfactory examinations in subjects chosen from this group aggregating sixteen entrance units, including an advanced requirement in at least one foreign language other than the elementary language offered in the Primary Group. Candidates desiring to enter as special students will take such examinations in this group as may be required by the instructor of the major department to which they seek admission, provided that such requirement shall not exceed sixteen entrance units. The subjects are:—

1. *Elementary German*, when not offered in the Primary Group.
2. *Advanced German.*
3. *Elementary French*, when not offered in the Primary Group.
4. *Advanced French.*
5. *Elementary Latin*, when not offered in the Primary Group.
6. *Advanced Latin.*

7. *Elementary Greek*, when not offered in the Primary Group.
8. *Advanced Greek*.
9. *History*. Any one of the following:—
 - (a) Greece and Rome, when not offered in the Primary Group. (A two-year course.)
 - (b) England and America, when not offered in the Primary Group. (A two-year course.)
 - (c) Europe from the Germanic invasions to 1648. (A two-year course.)
 - (d) Any *one* of the primary subjects not offered as such, combined with a year's detailed study of a limited period within that field. (A two-year course.)
 - (e) A year's detailed study of a limited period within the field of either of the primary subjects offered by the candidate. (A one-year course.)
10. *Advanced Mathematics*, with options embracing Plane Trigonometry, Solid and Analytic Geometry, and Advanced Algebra.
11. *Physics*.
12. *Chemistry*.
13. *Botany*.
14. *Zoölogy*.
15. *Drawing*.

The foregoing list of subjects is offered as an outline with which to work, and not as a perfected plan for the Secondary Group.

Conditions.

No candidate will be admitted to study in the College with conditions in the Primary Group amounting to more than *one entrance unit*.

No candidate having conditions amounting to more than *four entrance units* will be admitted to regular standing as a candidate for a degree; but candidates who have passed the requirements of the Primary Group, with conditions not exceeding *one entrance unit*, and have otherwise complied with the requirements governing the admission of special students, may be so admitted and allowed to take such work in the College as they may be qualified to carry on. Such students

may, when the College gives subjects covering the ground of their deficiencies, make up such deficiencies by taking the corresponding subject in the College, and so ultimately attain regular standing; but work so taken to fulfil entrance requirements will in no case be counted as a part of the College requirements for a degree.

Admission by Certificate.

The committee recommend that a new form of certificate be adopted, that shall require school principals to state with exactness the time in years and in weekly periods given to each subject certified, with the standing of the candidate in each subject, according to the records of the school; and in addition a brief statement of the ground covered by the instruction, books, and method used, and such other particulars as department examiners of this College may see fit to require; also that no certificate not filled out in this manner and properly certified be accepted; and that no certificate be accepted which covers a course of study of less than four years, or from a school which has not filed with the Secretary of the Faculty of Tufts College a full statement of its teaching force, and of its course of instruction. The committee suggest that a blank similar to the one now in use could be adapted to the form of statement required by arranging the present blank spaces as follows:—

Time in years.....	MATHEMATICS. State here definitely the text-books used, methods of instruction, and ground covered.
Periods per week } for each year. }	
Pupil's standing....	

Your committee believe that a strict adherence to these requirements will do away with much of the weakness of the present loose system of receiving certificates, that it will be

agreeable to all self-respecting schools, and that it will discourage the sending in of certificates by schools which are not qualified to offer them.

All of which is respectfully submitted by the committee.

E. H. CAPEN, *Chairman.*

BENJ. G. BROWN.

W. R. SHIPMAN.

LEO R. LEWIS.

EDWIN A. START, *Secretary.*

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President:—

The whole number of students in the Divinity School during the year 1895-96 was forty-one,— nine Seniors, sixteen Middlers, nine Juniors, four Sub-juniors, and three Specials. Twelve entered at the beginning of the year, two for the Senior class, one for the Middle, three for the Junior, four for the Sub-junior, and two as Specials. Of the nine Seniors who were graduated in June, four are settled as pastors in Massachusetts, one in Washington, one in Wisconsin, one in Rhode Island, and one in Halifax, Nova Scotia. Twenty-seven students, representing the Middle, Junior, and Sub-junior classes, did missionary work during the summer vacation, in Maine, New Hampshire, Massachusetts, Rhode Island, Vermont, and Ohio.

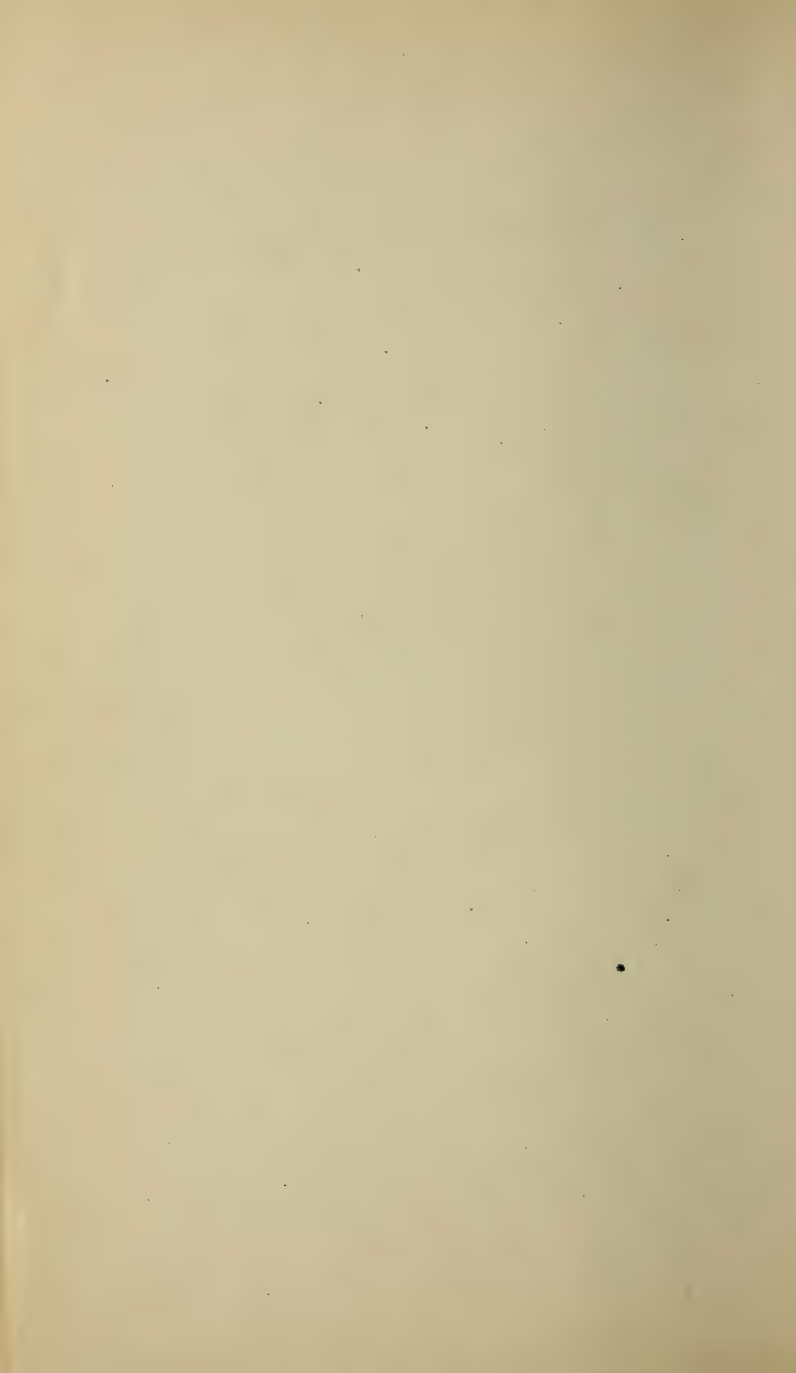
Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 17, 1896.



THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President:—

Three years of earnest, devoted work have been given to this department. These three years, for which the present incumbents have been held responsible, have produced results without parallel in the history of medical schools; beginning with a matriculate of eighty the first year, one hundred and four the second, and this, the third year, one hundred and seventy-six, divided as follows: Seniors, thirty-nine; Middlers, forty-nine; Freshmen, seventy-five; and special students, thirteen.

In the Senior class there were six women; in the Middle, six; and in the Freshmen, sixteen. Four of the special students were women. Thirty-two women matriculated this year, as evidence that there was no mistake made in establishing a medical school for men and women, where both could enjoy alike the advantages of a medical education.

The Freshman class is the best in the history of the School,—a large, enthusiastic, earnest class, holding frequent quizzes, and evincing a determination to make the most of their opportunities. It is remarkable how little friction there has been; every member of the teaching force has labored faithfully for the best interests of the School. Some changes have been made in the curriculum, but only to broaden, enlarge, and make better the work. It is still desirable to make some changes, and I would especially recommend that a change be made in physiology by dividing it, placing physiology of the nervous system in the second year; so much being required in physiology, and that of the nervous system being so com-

plicated, it may well, in my opinion, be placed in the second year.

During the year there has been a large amount of clinical material available, and now that we enter upon a four-years course, this department will more fully meet the demands of the times. Still we must not forget that didactic work lies at the foundation, and that the student must be thoroughly grounded in the theory of medicine in order to make available the clinical advantages.

There have been two resignations during the year,--that of Dr. R. M. Pearce and Dr. W. P. Derby. Dr. Pearce was demonstrator in Physiology,--a very efficient, earnest man. He has been elected assistant pathologist at the City Hospital. Dr. Derby was instructor in Gynæcology and Obstetrics.

The Trustees have appointed Dr. George A. Bates, lecturer on Histology; Dr. F. M. Briggs, assistant professor of Clinical Surgery; and Dr. C. G. Cumston, assistant professor of Surgical Pathology.

Dr. C. D. Knowlton has returned from abroad and taken up his work as demonstrator of Anatomy.

The encouraging prospects of last year have been more than realized, but the outlook for the coming year is even better, for we have every encouragement for a larger class and more commodious quarters.

With the close of this year the executive committee of the Faculty turn over to the Trustees a successful Medical School, well equipped, out of debt, thoroughly devoted to the College, and with every prospect of an abundant success in the future. This committee, on retiring, wish to express to you, Mr. President, and through you the Trustees, their high appreciation of your endeavors in behalf of the Medical School, and the union of thought and purpose that has seemed to actuate the College.

Nothing but pleasant omens confront us; with these and a devoted Faculty the Medical School is established as a part of

a noble New England institution, thoroughly competent to meet the demands of our time in equipping men and women alike to practise successfully the healing art.

Respectfully,

ALBERT NOTT,

Dean.

TUFTS COLLEGE,

August 29, 1896.

THE BROMFIELD-PEARSON SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

To the President : —

Thirteen students entered the preparatory and special courses of the School, and seven of these will enter the College in the fall of 1896. Beside the requisite preparation for the Engineering Department, these students have carried on a part of the Freshman course, which, in the case of two students, will admit them to the Sophomore class.

This feature of the preparatory course, which admits of the necessary preparation in the required studies, together with the opportunity of pursuing college work in such departments as are not dependent on this preparation, should be made more widely known. It does not compete with or substitute a high school course, and it is not designed for the class of students who regularly pursue the course of our secondary schools, but for those not in these regular courses, and who would otherwise require private instruction to enable them to enter the College within the year, the school offers peculiar advantages.

The engineering classes of the College, receiving instruction in the shops of the School, are as follows: Thirty students have pursued the course in Carpentry, Pattern Making, and Moulding. Twenty-seven have completed the course in Forging, and those in the Machine course numbered twelve. Much of the thesis work of the students was done in the shops. The patterns for the phase alternator were built and most of the machine work done here. We have also in process of

construction, a testing machine, pattern lathe, and smaller tools.

During the past year there has been added to the equipment of the shops the following tools: four lathes, one planer, one shaper, one drill, and one milling machine. Of these, two lathes were bought, one was presented by Mr. Charles E. Carpenter, of Providence, and the balance were transferred from the electrical department of the College. The shops have been wired for electric lighting, and by the loan of a dynamo from the electrical department, we have been able, for the first time, to run the number of hours required for the college classes.

Respectfully submitted,

GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE,

September 17, 1896.

THE BARNUM MUSEUM OF NATURAL
HISTORY.

REPORT OF THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President :—

There are few remarks to be made concerning the Barnum Museum for the year 1895-96. No changes have been made in the display of specimens. A number of marine invertebrates have been mounted for exhibition in the most approved manner, but these are awaiting the cases for new wing. Some work has been done on these cases. One needs only the glass, while another is far advanced.

The additions to the collection are few, the chief being a number of rare and beautifully preserved marine invertebrates from Wood's Hole, the gift of Mr. F. D. Lambert, Miner Fellow in Biology. A number of slides have been added to the microscopical collection, illustrating special points in the structure and development of animals.

Several tables and cases have been added to the equipment of the laboratories, and our supplies and minor apparatus have been added to considerably, this being especially true for the materials for study and dissection.

The library in the building has increased forty-four bound volumes, and four hundred and sixty-six parts of serials and pamphlets. These have largely come through exchange, but a considerable number have been purchased, especially in the line of text-books and standard works. The advantages of having this departmental library in the Barnum building are daily demonstrated, the average of volumes referred to daily being at least as high as ten.

The most important need of the museum, at present, is a

series of the Ziegler wax models. These would aid greatly in teaching and illustrating points of structure and development, and at the same time, if properly labelled, they could not fail to be instructive to the general public.

Respectfully submitted,

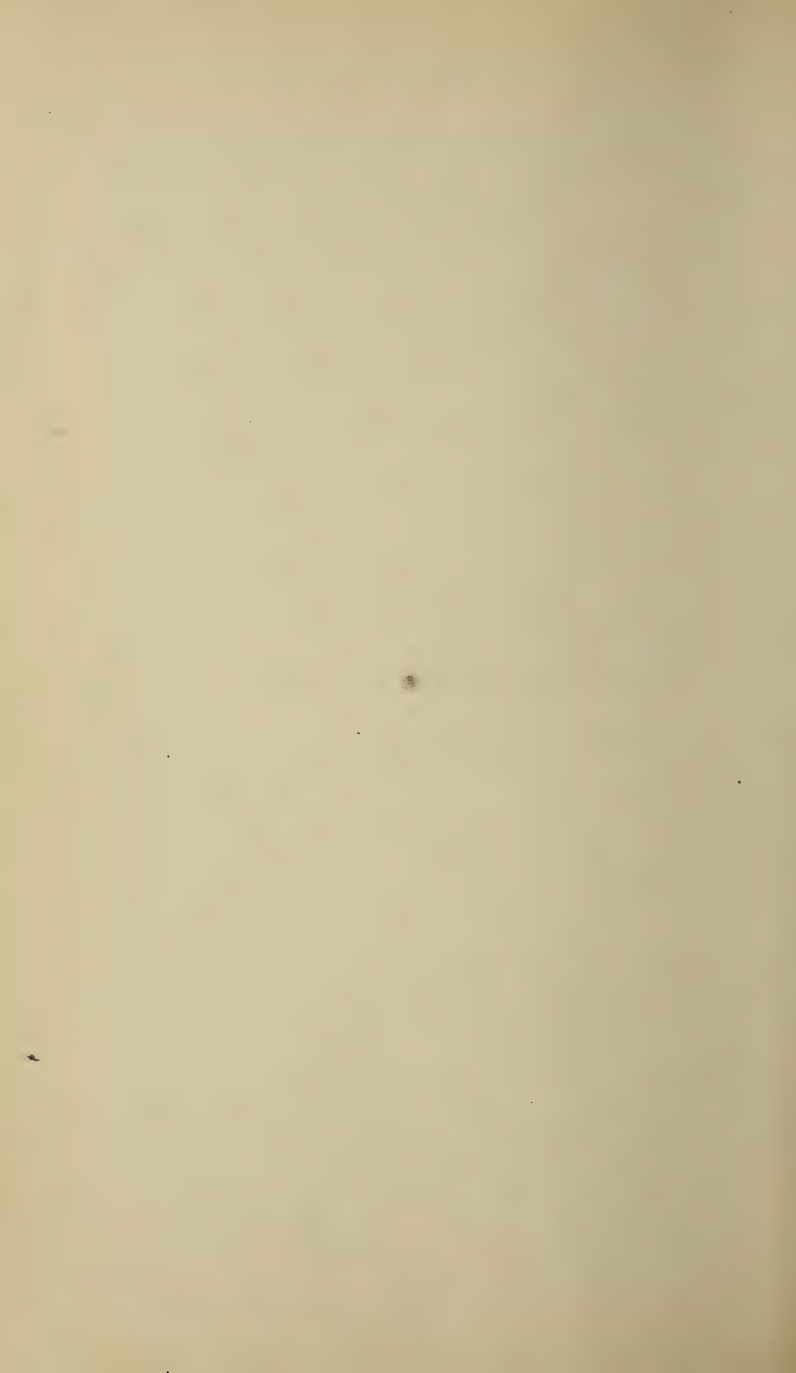
JOHN P. MARSHALL,

Director.

TUFTS COLLEGE,

September 17, 1896.

THE GODDARD GYMNASIUM.



REPORT OF THE GODDARD GYMNASIUM.

To the President:—

During the past year one hundred and nine men and forty-two women have taken the prescribed work in physical training. Of the men forty-seven were Sophomores and forty-eight Freshmen. Several of the Seniors and Juniors also took part in the class work.

The men were assigned to two large divisions, and each division, under the direction of Mr. Stroud, the director of the gymnasium, was given free movements and exercise with the wand or dumb-bells.

Each division was then divided into squads, and under the leadership of the instructor and the class leaders, these squads were given work upon the vaulting bar, high and low parallel bars, and the barse.

In addition running, jumping, and the use of the medicine and basket-ball were encouraged.

The men of the Sophomore and Freshman classes were required to meet the instructor in physical training three times a week from the first of December to the twentieth of March.

During those months of the College year when the weather was suitable, active outdoor exercise was encouraged and participated in by most of the students.

The work of the women in the gymnasium was under the direction of Miss Olive F. Moakler, a graduate of the Boston Normal School of Gymnastics.

Miss Moakler met the women students regularly from the first of December to the first of April.

The Swedish or Ling System of gymnastics was used.

A series of free standing movements, which brought all parts of the body into activity, were given, their purpose being to accelerate the circulation, improve the breathing, and give tone to the whole muscular system.

In connection with these movements use was made of the apparatus and the basket-ball.

Each student receives a thorough physical examination before beginning the gymnasium work.

Last year one hundred and seventy-six students were examined.

Of this number a few were found whose physical condition was such as to prevent their doing the required work of the gymnasium, and they were allowed to omit the work completely, or that portion of it which might do them injury.

Several students were found who had slight deformities which, with the proper form of exercise, could be corrected.

The particular forms of exercise which those students needed were explained and an effort was made to aid the students in carrying them out.

Taken as a whole, the entering class of last year was considerably below the average in its physical development.

The capacity of the gymnasium has been tested by the increasing number of students attending the College.

With the present accommodations there are barely enough lockers for the use of those students who are required to take the gymnasium work — the two lower classes.

Consequently many of the students of the two upper classes who would like to continue their work in the gymnasium are prevented from doing so.

Every student in the College should have the opportunity of taking some systematic form of physical exercise.

Improved and more commodious bathing facilities are also needed.

An equally pressing need is that of additional apparatus.

With the aid of a better equipment, the work in this department of the College could be made much more profitable and interesting.

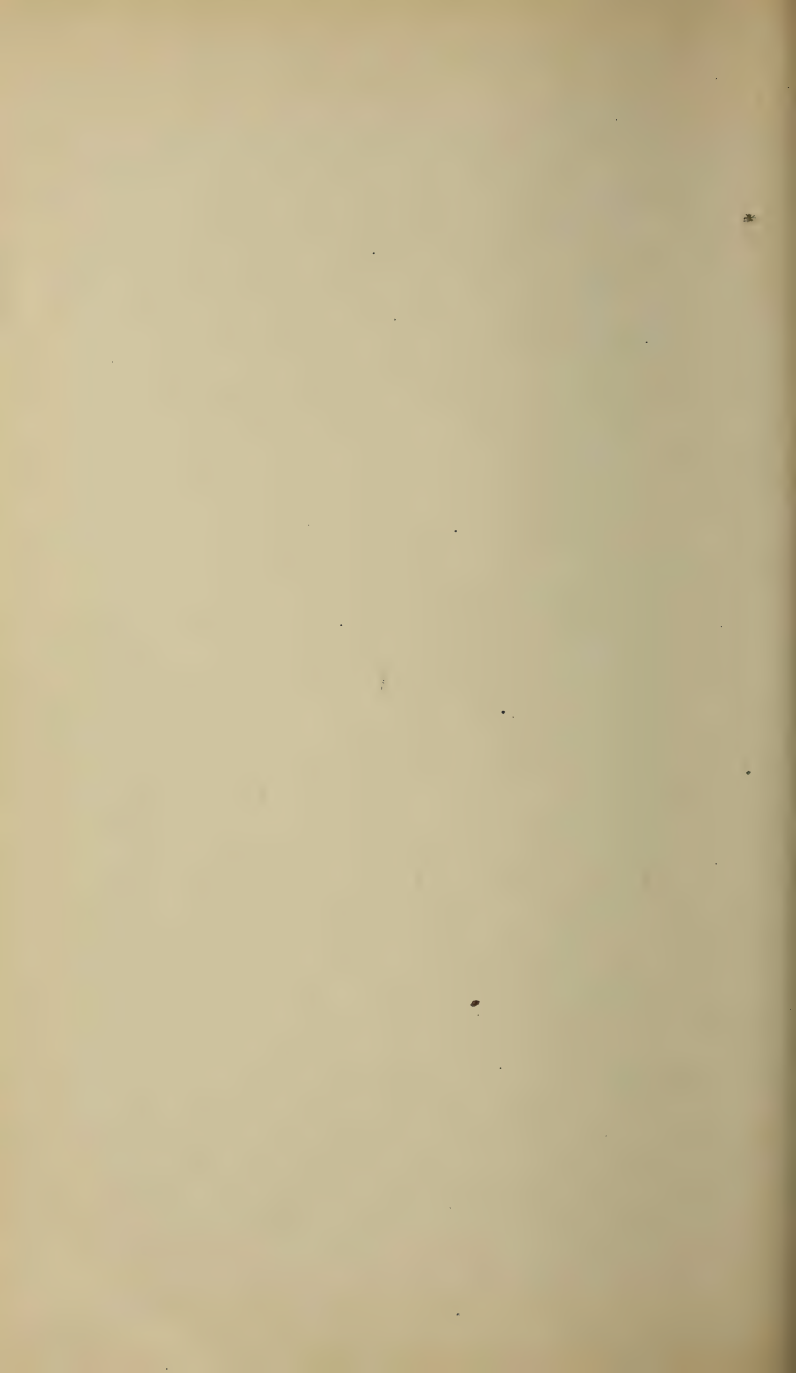
Respectfully submitted,

WILLIAM R. WOODBURY, M. D.,

Medical Director.

TUFTS COLLEGE,

September 17, 1896.



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ANNUAL REPORT

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OF

TUFTS COLLEGE

1896-97.



BOSTON :
THE BARTA PRESS.

1897.

ANNUAL REPORT
OF THE
PRESIDENT
OF
TUFTS COLLEGE
1896-97.



BOSTON :
THE BARTA PRESS,
1897.

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Tufts College.

PRESIDENT'S REPORT.

1896-97.

To the Honorable and Reverend the Trustees of Tufts College:

GENTLEMEN: — The President of the College has the honor to submit the following report for the academic year 1896-97, namely, from Sept. 17, 1896, to Sept. 16, 1897.

The Board of Trustees remains the same as at the time of my last annual report.

The College has suffered a serious loss in its teaching force through the death of Professor Heman Allen Dearborn, who had filled the chair of Latin since it was made vacant by the death of Professor Alpheus A. Keen in 1864. Professor Dearborn was a member of the class of 1857, the first class that graduated from the College. He was also the first alumnus to be appointed to the teaching staff. In the discharge of his duties as a Professor he was painstaking, thorough, and indefatigable. He spared no effort to make the mastery of his subject complete. His faithfulness was not confined to the daily preparation for his classes, but he enriched his mind by wide reading and foreign travel and study. The number of his pupils who have made the teaching of Latin their life work and who have risen to eminence in that specialty bear witness to the stimulating quality of his efforts. He died in the full ripeness of his powers, with his vision unclouded, and before his mental qualities had suffered any impairment from age, after thirty-three years of devoted and joyous service.

His work performed, however, in fulfilment of his duty as a

Professor of Latin does not begin to comprise the full catalogue of his deeds done in behalf of the College. Story's beautiful bust of the first President, which fills a niche in Goddard Chapel, is the fruit of his untiring and persistent demand upon the pupils of Dr. Ballou, supplemented by generous contributions from his own purse. He was secretary of the Faculty for twelve years, and from the time that he gave up that office in 1894 he was Registrar until his death. The work he did in those offices was prodigious. Besides the clerical duties which belong to them, he performed the work which usually falls to the lot of an active dean. Here he exhibited that mastery of details which is absolutely essential to good administrative work. But in addition to this he showed a personal interest that brought him into intimate relations and close sympathy with nearly every student in the College. The spontaneous and genuine sorrow manifested by the entire student body at his decease was a tribute such as a teacher, alive or dead, rarely receives.

Appointments in the teaching force of the College have been made as follows :—

EDWIN A. START, A. M., *Assistant Professor of History.*

FRANK T. DANIELS, A. M. B., *Assistant Professor of Engineering.*

WILLIAM KENDALL DENISON, A. M., *Assistant Professor of Latin.*

THOMAS WHITTEMORE, A. B., *Instructor in English for five years.*

Messrs. Start, Daniels, and Whittemore have been engaged for some years in the work of instruction and have demonstrated their fitness for permanent positions on the Faculty. Mr. Denison, who has been assigned to the Latin department, is a graduate of the class of 1891. Since graduation he has spent three years in the graduate school of Harvard University and was the first holder of a fellowship in the American School for

Classical Study at Rome. He had been selected by Professor Dearborn, before his death, to assist him in his work.

The following reappointments have been made for the year :—

- FRANK E. SANBORN, S. B., *Instructor in Mechanical Engineering.*
JOHN E. BUCHER, PH. D., *Instructor in Organic Chemistry.*
FRANK B. BROWN, M. D., *Instructor in Bacteriology, and Assistant in Pathology.*
WILLIAM A. WHITE, M. D., *Lecturer on the Diseases of Children.*
GEORGE A. WEBSTER, M. D., *Instructor in Otology.*
W. R. WOODBURY, A. B., M. D., *Lecturer on Hygiene, and Instructor in Nervous Diseases, — also Medical Director of the Gymnasium.*
ALBERT E. ROGERS, M. D., *Instructor in Materia Medica*
WALTER J. OTIS, M. D., *Lecturer on Rectal Diseases.*
WILLIAM S. BOARDMAN, M. D., *Lecturer on Laryngology.*
EDWARD E. THORPE, M. D., *Instructor in Medical Chemistry.*
EDGAR GARCEAU, M. D., *Clinical Instructor in Gynæcology.*
GEORGE A. BATES, D. D. S., *Lecturer on Histology.*
FRED S. RADDIN, M. D., *Lecturer on Genito-Urinary Surgery.*
THEODORE HOUGH, A. B., PH. D., *Instructor in Physiology.*
FRANK G. WREN, A. B., *Walker Special Instructor in Mathematics.*
HERBERT E. CUSHMAN, A. M., PH. D., *Instructor in Philosophy.*
E. CHANNING STOWELL, A. B., M. D., *Instructor in Children's Diseases.*
CHARLES C. STROUD, A. B., *Instructor in Physical Training.*
HARRY GRAY CHASE, B. E. E., *Instructor in Electrical Engineering.*
SAMUEL C. EARLE, A. M., *Instructor in French, and Assistant in English.*
CHARLES G. JORDAN, A. B., *Tutor in Mathematics, and Teacher in the Bromfield-Pearson School.*
CHARLES H. CHASE, S. B., *Instructor in Bromfield-Pearson School, and Superintendent of Shops.*
OLIVE FRANCES MOAKLER, *Instructor in Physical Training for Women.*
HOWARD S. DEARING, M. D., *Instructor in Clinical Medicine.*
HERBERT W. WHITE, M. D., *Instructor in Clinical Medicine.*

ORLANDO F. LEWIS, A. M., *Assistant in Modern Languages.*
 VIRGIL L. LEIGHTON, A. M., *Assistant in Qualitative Analysis.*
 JOHN W. EDWARDS, S. B., *Assistant in General Chemistry.*
 J. C. D. CLARK, M. D., *Assistant in Theory and Practice of Medicine.*
 JOHN I. FRENCH, M. D., *Assistant in Materia Medica and Therapeutics.*
 CHARLES D. KNOWLTON, M. D., *Demonstrator of Anatomy.*
 THOMAS F. GREEN, M. D., *Assistant Demonstrator of Anatomy.*
 PATRICK F. KELLEHER, M. D., *Prosector of Anatomy.*

The following new appointments for one year have been made:—

ROBERT N. HARTMAN, A. B., PH. D., *Instructor in Qualitative Analysis.*
 EDWARD L. TWOMBLY, A. B., M. D., *Clinical Instructor in Medicine.*
 WARREN F. GAY, M. D., *Instructor in Surgery.*
 JOSEPH C. STEDMAN, M. D., *Instructor in Rectal Diseases.*
 FRED D. LAMBERT, PH. D., *Assistant in Biology.*
 WILLIAM R. WHITEHOUSE, A. M., *Assistant in Organic Chemistry.*
 S. P. COTTRELL, M. D., *Assistant in Gynæcology.*
 FRED STANLEY GRIFFIN, M. D., *Assistant in the Theory and Practice of Medicine.*
 ETHEL MONROE HAYES, A. B., *Librarian's Assistant.*

The whole number of students admitted to the College in all departments is one hundred and eighty-three. They are distributed as follows:—

College of Letters	89
Medical School	77
Divinity School	11
Bromfield-Pearson	6

183

The whole number of students enrolled in the College in all departments is four hundred and seventy-four. They are distributed as follows:—

College of Letters:—

Graduate	6
Senior	35
Junior	53
Sophomore	64
Freshman	76
Special	18
	252

Divinity School:—

Senior	14
Middle	9
Junior	4
Sub-Junior	4
Special	5
	36

Medical School:—

Senior	54
Middle	65
Freshman	56
Special	2
Graduates	3
	180

Bromfield-Pearson 6

Total number of students 474

Of the whole number of students in the several departments, one hundred and four are women. They are distributed as follows:—

College of Letters:—

Graduate	1
Senior	5
Junior	8
Sophomore	17
Freshman	23
Special	7
	61

Divinity School:—

Senior	4
Middle Class	3
Special	4
	11

Medical School:—

Senior	8
Middle Class	11
Freshman	11
Graduate :	2
	32
Total number of women.	104

The whole number of degrees given in course at the Annual Commencement was one hundred and three, distributed as follows :—

Bachelor of Arts	19
Bachelor of Philosophy	2
Bachelor of Science:—	
In Civil Engineering	3
In Electrical Engineering	7
In Mechanical Engineering	1
In Biology	2
In General Science	1
Bachelor of Divinity	13
Doctor of Medicine	42
Master of Arts	11
Doctor of Philosophy	2
Total number of degrees in course	103

Buildings.

The growth of the College during the last five years, by increasing the size of the classes, has put a strain upon our recitation and lecture-room accommodations that was scarcely anticipated. Rooms which sufficed for classes of twenty-five and thirty students have in most cases become wholly inadequate for classes of sixty and one hundred. Fortunately, the College can make use temporarily of an unoccupied room in the Barnum Museum of Natural History, and of the transept in Goddard Chapel. But one of our most pressing needs in the immediate future will be a commodious building devoted exclusively to recitation and lecture purposes. Possibly some

one of the recent bequests, not yet at the disposal of the College, which involve the necessity of a building, might be applied to this object. But it would be better if some benevolently inclined person would provide the means which, under his own direction, might be used in the accomplishment of this purpose.

I cannot omit to say that the need becomes more and more apparent every day of a large engineering laboratory. The Bromfield-Pearson Building is already stretched to its utmost capacity in this direction. The valuable engineering apparatus which cannot be housed in that building is scattered through various buildings in different parts of the grounds. Much of it is inconvenient of access and can serve the uses of a few students only at a time. Indeed there is a demand both for a laboratory of general engineering and electrical engineering. The College has already the materials which would go far towards the equipment of two such buildings. By reason of its improper and inconvenient housing it cannot be handled up to the full limit of its usefulness. Of course the ideal thing would be an endowment of the scientific department, making it entirely independent in its outfit and resources of the funds of the College. Experience has demonstrated that there is a field here for the work of this department. For more than a decade our patronage has taxed our facilities to the utmost. The positions held by men who have received their engineering training with us testify, also, to our ability to meet the scientific requirements of the age. The department is here to stay. Any man of wealth, therefore, who is ambitious of rendering a conspicuous service to science and humanity, could nowhere build a more enduring monument, or be more sure of accomplishing a lasting and far-reaching beneficence.

Scholarship Funds.

There is need of a substantial increase in our scholarship funds. For a good many years the College was thought to be well provided in this respect. Until within a recent period

it was possible to give free tuition to nearly every worthy student whose financial needs rendered it necessary. But now that our numbers have increased nearly threefold, we find ourselves compelled to withhold aid from many meritorious students. This need is experienced not only with reference to those who are already in the College, but with reference to those who are still in the preparatory stages. We have no scholarships which can be pledged beforehand to incoming freshmen. This puts us at a decided disadvantage, even with what may be regarded as our own constituency, since older and more richly endowed institutions are now in the habit of going into the fitting schools and offering large inducements to pupils of promise. It is desirable, therefore, that new scholarships should be founded to be used exclusively in this way. Failing that, the question may be raised whether the Trustees might not assign a certain number of scholarships or half scholarships now in the gift of the College for bestowal through the fitting schools upon incoming students of approved scholarship, character, and ability.

There are other and more important reasons for increasing the power of the College to extend its benefits to those whose pecuniary means is limited. During the year the plan which I outlined in my last report for increasing the number, variety, and scope of courses required for admission, so as to bring the College into intimate contact with the public school system through the high schools, both English and classical, has been perfected and put into active operation. Already there are indications of a disposition on the part of students in the secondary schools to avail themselves of the privileges thus offered. The movement is in a high degree democratic. It is intended to bring the College within the reach of all ambitious and capable youths, regardless of the kind of training they have received, provided always that their training has been sufficiently prolonged, substantial, and thorough. This seems to me to be the indispensable condition on which the institu-

tions of superior grade may continue to hold a high place in the public regard and enjoy the peculiar favors that have been granted to them hitherto. But in order that the children of the poor may enjoy these opportunities, it must be possible for the College to grant pecuniary aid, at least, to the extent of tuition. The College is justified, therefore, in making an earnest appeal to the friends of higher education for the foundation of new scholarships to be applied by the Trustees to cases of deserving need.

The Divinity School.

The Trustees have taken an important step in deciding to charge tuition to students in the Divinity School. Up to this time students of theology have been without charge for either tuition or room rent. For some time there has been a growing feeling that this practice was the basis of an unwholesome discrimination between divinity students and undergraduates in the College of Letters, and between divinity students and other professional students. The practice has appeared to be injurious in many ways. It had a tendency to discredit theological studies in the estimation of college students, from whom it is desirable always that the ministry should be recruited. It held out an inducement to men who could not obtain an education in any other way to become candidates for the ministry for this purpose. It has been a strong stimulus to a short cut into one of the most important of the learned professions. It can scarcely help impairing in some measure the self-respect which is essential to the independence and success of the ministry in our time. The first effect of the change of policy may be to reduce the number of students in the Divinity School. But I cannot feel that this effect will be more than temporary. At all events, it cannot fail to improve the quality and raise the standard of candidates for the ministry.

In this connection it may not be improper for me to repeat what I have so often said before, and to say it, if possible, with

stronger emphasis than ever, that the time has come when the Divinity School should have independent endowment. The growth of the College of Letters makes an increased demand upon our unrestricted funds. Every year, therefore, the burden of maintaining the Divinity School becomes a greater and greater strain. The School, to be sure, is not wholly without funds of its own. Presently and prospectively there are very considerable endowments which may be applied to its maintenance. But when these are all added together, there is need of at least one hundred thousand dollars, the income of which may be applied exclusively to the expenses of the School. Nay, the income of two hundred thousand dollars could all be applied most profitably to the development of theological instruction. In consideration, however, of the first named of these sums I am confident that the Trustees would feel justified in bestowing the name of the School upon the happy donor. Any wealthy friend of ministerial education under our auspices may feel that he has a double motive for his generosity, — the opportunity of conferring a blessing upon the church and the world, and of securing a high and enduring honor.

The Medical School.*

The changes that have taken place in connection with the Medical School are worthy of special comment. At the beginning of the year the Trustees assumed the entire management and control of the School. Realizing that its growth and prosperity demanded more commodious and permanent quarters the large stone church at the corner of Shawmut Avenue and Rutland Street has been purchased, and, during the summer, in accordance with plans made by George A. Clough, architect, the building has been transformed into a medical school and is now ready for occupancy. Under the arrangement now made the building is three stories in height, and contains ample waiting and study rooms, lecture halls, an amphi-

* For an account of the opening of the new building see Appendix.

theater, and large and well-equipped laboratories for chemistry, physiology, bacteriology, and pathology. The growth of the School has been very rapid. Beginning with about sixty students four years ago, it now contains nearly two hundred. The standard of admission has been raised and the courses leading to the degree of M. D. have been increased from three years to four years. In its new building, with a thorough modern equipment, the School cannot fail to make progress and grow in the regard of all the friends of medical education.

As in the scientific and theological departments, there is need here, also, of endowment. It is true that there has not been the same tendency to provide endowment for medical schools as for other schools for professional and technical work. But under the changed conditions of modern education the demand is just as strong here as elsewhere. The clinics which should be directly tributary to the teaching of every high-grade school cannot be maintained without expense; neither can the laboratories which are absolutely essential in these days of objective teaching. Moreover, every medical school would profit greatly by a hospital, even though it should be a small one, under its own control. Often the power to obtain an eminent specialist in an important department of instruction depends upon the ability of the school to offer him a hospital appointment. We have laid our plans broadly. We shall put emphasis more and more upon laboratory methods. We shall begin with a dispensary of our own under the same roof as the School, and shall rely upon that to a considerable extent for clinical material. We intend, also, to move towards the acquisition of a hospital at the earliest possible date. Even if our first undertaking shall be very humble, we shall strive to secure the means for bedside teaching that shall be wholly our own. The privilege is here given, therefore, to those who are interested not only in the best medical training, but in alleviating the sufferings of the sick, to promote these ends through the most approved instrumentalities.

The Taxation of Colleges.

The colleges of Massachusetts have reason for apprehension, in view of a recent decision of the Supreme Judicial Court in the case of the President and Trustees of Williams College *vs.* the Assessors of Williamstown, in which, by a divided opinion of the justices, it has been held that houses and lands occupied by professors or teachers in part payment of their salaries fall within the category of taxable property. This looks like a reversal of the unbroken and time-honored policy of Massachusetts, according to which, from the foundation of the Commonwealth, certain properties of schools and colleges, hospitals, churches, and similar charities, have been exempted from taxation in consideration of the inestimable benefits conferred upon the community in the education, healing, and moral guidance of the people. So serious a revolution in the history and antecedents of a great state ought not to be suffered except after the most earnest protest and even the stoutest resistance, within the limits of the law, by those who are charged with the responsibility of administering charitable trusts. It is inconceivable that Massachusetts, the leader of all the states in the things that make for the welfare and progress of humanity, should have broken away from her ancient moorings, or that she should have lost her sense of obligation and gratitude for the mighty measure of beneficence and glory which she has constantly received from her educational endowments. Nor does it seem possible that either the legislature or the courts would permit the state to rest long under so grave a misconception of her function and duty.

The decision has caused the assessors in the different municipalities where educational establishments have their local habitation to levy taxes upon many classes of property which have been treated hitherto as exempt. The city of Somerville alone has just added a large sum to the taxable list of properties held by Tufts College. The amount of tax exacted is enough nearly to pay the salary of a high-class instruc-

tor. The new ruling, if it is allowed to stand, will bear with especial severity upon us. Not only have we a large estate in lands,—the gift of Charles Tufts, which has never been in the market, and which for the most part is not likely ever to come into the market,—it must be held for the development of the College,—but owing to our isolated position we are compelled to maintain houses for the occupancy of our teachers. Some of these houses have been erected specifically for this purpose, some of them have been acquired in the inevitable changes incident to the teaching force. They are as much a necessity in the administration of the College as dormitories or recitation halls. Indeed, there are some indications that this class of property is aimed at also. In Cambridge the assessors have taxed the Foxcroft Club Building, which is used, partly as a dining room assigned for that purpose to the Club by the corporation of Harvard College without rent and partly as a dormitory. At Williamstown the assessors have levied upon a building used as an infirmary for the isolation and medical treatment of sick students.

Why should these institutions be compelled to bear this burden? We do not tax our public school buildings and apparatus, even though they may be the gift in part or altogether of private individuals. The bare suggestion of such a thing would be deemed absurd; and yet the academies and colleges perform a necessary part in the education of the people. If private munificence had not made provision for it, the state would certainly have been called upon to do it. In many states of the Union the universities are a part of the school system maintained at the public expense by the taxation of the people. Is it just, because men of large generosity and noble public spirit have seen fit to relieve the state of this burden, that their benefactions should be restricted and diverted from the object to which they have been consecrated, to assist in the maintenance of highways, lights, and other expenses of the town or city? No more

effectual means could be devised to discourage the application of private means to public uses. Few men can be induced to give money to establish and endow a professor's chair if they feel that by the strong hand of the state their money may be taken to build a street or construct a sewer.

Charles Sumner, constantly and persistently throughout his senatorial career, objected, even when the defense of the Republic created an unusual necessity for revenue, to the imposition of a tax upon the importation of foreign books, because it was "a tax on knowledge," and that is a tax which is wholly without justification in an enlightened nation. Last winter, during the discussion of the Dingley Tariff, I wrote to Senator Hoar an earnest protest against the imposition of a tax upon books and articles imported for the use of libraries and laboratories in the educational institutions of the country. Almost as soon as the mail could bring it I received the following reply: —

UNITED STATES SENATE,
WASHINGTON, D. C., March 24, 1897.

Dear Dr. Capen: — I am utterly opposed to duties on books imported for public libraries and other institutions of learning. It is not only a tax on learning, but it is a tax on benevolence. It is saying to persons who give money to one public purpose: "The money you give shall only be used on condition that out of it shall be taken a considerable sum for other purposes." I think that a very bad policy indeed.

I am faithfully yours,

GEO. F. HOAR.

This is the whole case in a nutshell. Until the state is ready to abandon private beneficence altogether, and assume the responsibility for every need that the community may have, no other ground seems at all tenable.

I am aware that it is urged that the burden of exemption is too restricted, since it is confined to the cities and towns where the colleges are established. It is said that the benefits conferred by the colleges are shared by a wider public, and that,

therefore, the local community ought not to be called upon to suffer the whole weight of the exemption. But consider for a moment the local advantages which accrue from the presence of these instruments of the higher training. What would Cambridge be if the University with which its name is associated the world over were taken away from it? Some one has wittily said that there would remain "East Cambridge and Cambridgeport." Certain it is that a very considerable portion of the wealth, beauty, refinement, and glory of the city is due to the great school which for more than two centuries and a half has been taking root there. The slight tax exemption which the city is giving from year to year is a very small price to pay for so rare a blessing.

Take the case of Tufts College. Nearly fifty years ago it was planted on a bleak hilltop, remote from population and almost worthless for either agricultural or building purposes. During all these years it has been engaged, at its own expense, in developing and beautifying its grounds. What it has done has given a higher value to all the surrounding properties, and made the entire neighborhood attractive for residential purposes. It has brought together a collection of people of great value to any community. Eighty-five teachers are borne upon its rolls and maintained at its expense, more than half of whom reside within the College precincts. It has for years, without charge to either Somerville or Medford, maintained what is equivalent to a public park. Every day, at all seasons of the year, troops of people pass over our roads to our summit to get the commanding outlook and enjoy the landscape. The aggregate of such persons in one year would almost make "a company whom no man could number."

The city of Somerville has very wisely appropriated large sums of money for the creation, preservation, and ornamentation of Powder House Park. But taking the days of the year together, it is safe to say that far more people resort to the grounds of Tufts College for recreation and rest than to the

Powder House Park, with all its beauty and historic associations. In summer time multitudes of children, mothers with baby carriages, and weary laborers enjoying a day's outing, come and encamp under our trees, freely, and without fear of molestation. This is an advantage which the cities within which our grounds lie ought to appreciate and be grateful for.

Nor is this all. Scores of students in the past, from both Somerville and Medford, have received, many of them without charge for tuition, their education in Tufts College. The number from these municipalities in the College to-day is very considerable. The current catalogue bears upon its rolls fifty-two students who reside in Somerville and nineteen whose home is in Medford. Surely the institution is doing a not unimportant part in furnishing, at an almost nominal cost, the higher education for the youth of these cities. If not organically related to their school systems, it is in very close contact with them; so close, indeed, that to lay a tax upon it that will impair the scope and power of its teaching force is not only ungracious but unwise. On every account, therefore, the exemption which the colleges have received is but a slight favor in comparison with the almost priceless advantages which they confer upon the local communities in which their functions are discharged.

The colleges are democratic in their aim and tendency. They are the instruments, the noblest and most effective instruments yet devised, for the people's weal. This is true, although it may be true also, in a sense, that those who have received the higher education constitute an aristocracy, the only aristocracy that has any right of toleration in a democratic society. No doubt there is a dividing line, a point of isolation, between the educated and the uneducated; but it is an isolation that is without menace or danger in a free republic. M. Brunetière, the editor of the *Revue des deux Mondes*, the most intelligent and fair minded among the recent foreign observers of our institutions, says: "The universitarian tendencies in

America are on the way to constitute an aristocracy of intelligence in that great democracy, and, which is almost ironical, of that form of intelligence which we (the French people) are so wrong headed and stupid as to dread as the most hostile to the progress of democracy."

Some years ago I had the good fortune to be present at the opening of the University Club House on Beacon Street, in the city of Boston. The vast building on every floor was filled with as select and notable a company of men as ever assembled, perhaps, in one building, at one time, in America. There were lawyers of high fame, judges, statesmen, diplomats, teachers of wide renown, physicians whose achievements in the healing art are known the world around, golden-mouthed preachers, unsurpassed for eloquence in the history of the Christian church, editors, artists, litterateurs, novelists, poets, and masters in dramatic composition. One might say a very select and peculiar company; scarcely an undistinguished and ordinary man among them all. Within a stone's throw of that building there were doubtless men of princely fortune who would have given "a great price" to be numbered in that fold. But wealth could not purchase admission there — only that single patent of nobility which a democracy is permitted to bestow, the diploma of an institution of the higher learning. Yet there was nothing in that gathering to awaken distrust or kindle jealousy. One could not help remembering that the vast majority of all in that company came originally from humble homes. In many instances their fathers, nay, in many instances they themselves, in early life, had bent in toil on the farm and in the workshop. If here were the representatives of a great and powerful aristocracy, it is an aristocracy whose boundaries abut everywhere, without fences or barriers of any sort to mark the dividing line, upon the domains of the poor, and whose majestic porches open hospitably and with friendly invitation toward the dwellings of labor. In no just sense are the colleges of Massachusetts cut off from actual and vital contact with the people.

Under the recent enlargement of our requirements for admission, and in view of the new courses established to meet these requirements, the humblest pupil in Somerville, or Medford, or any of the surrounding towns, may enter the primary school with his eye fixed on Tufts College, and go forward, step by step, in the full confidence that his educational efforts may find their fitting crown in this noble institution which pious men, in faith and hope, have founded. The colleges, I repeat, are the people's instruments, the people's friends. They are constantly renewed, refreshed, and strengthened, not by the "blue blood" of the favored few, but by the "red blood" of the people. They should be watched, defended, and cherished, therefore, by the people, as the avenues over which their children may march to eminence and power, and as the richest and most precious inheritance that has been transmitted to them from an illustrious past.

Reports of Departments.

Turning, now, to the different departments of instruction, I take pleasure in saying that there never was a time when the College had a larger, more complete and efficient corps of instructors than at present. The work of the College is set forth in detail, and some of the more specific needs are emphasized.

Latin. — The freshmen read the twenty-first book of Livy, Cicero's *Cato Maior* and part of the *Odes* of Horace. A number of them also had one exercise a week in Latin composition, and one in Roman History and Antiquities.

The sophomores read the *Satires* of Horace, the *Captivi* of Plautus, the first book of Cicero's *Tusculan Disputations*, and the *Germania* of Tacitus. Six of the class did work in Latin composition.

The juniors and seniors, forming one class, read Cicero's *Brutus*, the *Satires* of Juvenal and the *Epistles* of Horace.

Professor Dearborn died on the fourth of May. Of course a good deal of time was lost in all the courses in Latin. Mr. William K. Denison took charge of the department on the eleventh of May. Assistant Professor Wade had at that time got the classes under way, and very kindly took charge of the freshmen for two or three weeks after that date.

Greek. — Courses V and VI were in charge of Professor Schneider. In the former course five students attended three recitations a week throughout the year. Text-books: Idyls of Theocritus, Æschylus' Prometheus, and Plato's Symposium. For reading at sight, one hour a week, the text-books were, Selections from Lucian, and Tyler's Lyrics.

Course VI. Two students attended this course. Three recitations a week were given throughout the year. Text-books: Pindar's Odes, Plato's Republic, and Aristotle's Ethics. For reading at sight, one hour a week, Xenophon's Hellenica and Selections from Thucydides were used.

The remaining work in Greek, in charge of Assistant Professor Wade, for the underclassmen did not differ in outline from that of previous years. Greek I, the beginners' class, six hours a week, started with fourteen members, of whom twelve finished the year. The work usually done in preparation for college was completed. The freshmen, a class containing some very good material, read the Memorabilia of Xenophon, Odyssey, Books II, III, and IV, the Philoctetes of Sophocles, and completed parts I and II of Allinson's Greek Composition. An extra hour was devoted to sight reading with an elective class composed of nearly the whole freshman Greek and a few sophomores. With the sophomores the first term was devoted to the orators: Andocides, Lysias, eight orations, and Æschines' Against Ctesiphon. During the second term the class read the Prometheus of Æschylus, the Medea of Euripides, and selections from the lyric poets. During the first term lectures were given on the Greek orators; during

the second, on such phases of Greek dramatic history as presented themselves.

During the second term a course in advanced Greek composition was given to an elective class composed mainly of seniors and juniors.

Mathematics.—Early in the year the health of Professor Brown, who has been assiduous in his devotion to the work of his department for more than thirty years, gave out. It was felt that he was entitled to a long rest, and that by this means he might recover his strength so as to render yet many years of effective service to the College. Accordingly a year's leave of absence was granted him, and the work which fell to him was distributed among the younger men in the department.

During the first term under Mr. Wren, ten students elected Analytic Geometry three hours a week, five students elected advanced Calculus three hours a week, and four students took Determinants three hours a week. These were in the College of Letters.

In the Engineering Department the sophomores had Analytic Geometry three hours a week, the juniors advanced Calculus three hours a week, and during the last seven weeks of the term the seniors spent two hours a week in Differential Equations. During the second term in the College of Letters, eight students continued Analytic Geometry three hours a week, and five continued advanced Calculus three hours a week. Three students elected the theory of Least Squares two hours a week. The sophomore engineers pursued elementary Calculus three hours a week, and the juniors took a course in advanced Calculus two hours a week. Also after February a course in Solid Geometry and Trigonometry was given three hours a week, and one in elementary Calculus for the same time.

Under Mr. Jordan, during the first term, twenty-one students from the College of Letters were instructed in college Algebra three hours a week. In the Engineering Department

twenty-six students had college Algebra four times a week, and twenty students Spherical Geometry twice a week. In the second term the same twenty-one students from the College of Letters studied Solid Geometry and Plane Trigonometry, meeting the instructor three times a week. Also nine students elected Theory of Equations and Elements of Determinants three hours a week, while from the engineering side, twenty-four students were taught Plane and Spherical Trigonometry three hours a week. Mr. Jordan gave, besides, six hours a week of instruction in the Bromfield-Pearson School throughout the year.

While commending the careful and thorough work of both his associates, Professor Brown speaks in terms of highest commendation of the attainments and teaching ability of Mr. Wren.

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Civil and Mechanical Engineering. — The sophomores were given instruction in land surveying, two exercises a week for the first term, Mr. Daniels taking one division and Mr. H. G. Chase the other. The field work, which was done in the first half of the term, when weather permitted, included operations with the compass, transit, and the level, each student becoming familiar with the manipulations of the instruments. The text-book and office work were taken up later in the term.

Topography was taken by the junior civils through the year, there being two exercises a week for the first term, and three in the second term. Mr. Daniels conducted the work, selecting a portion of the College grounds, which were surveyed, and a map worked up in colored topography. In the winter pen topography was taught, followed by text-book study of higher surveying. Mr. Daniels also had the senior civils during the first term in the field operations of railroad locations, laying out curves, slope staking, etc., and the second term in drawing and bridge work.

In steam enginery, instruction was given by Mr. Sanborn

to all junior engineers, three exercises a week for the first term. A text-book by William Ripper was used, and the instructor gave notes on certain parts. A study was made of the method of conducting tests, using Thurston's Engine and Boiler Trials. Some practical work was done in engine testing, each student taking part and becoming familiar with the use of the indicator.

The work of Professor Bray in the first term was with the seniors in Applied Mechanics, Hydraulics, Roads and Highways, and in Steam Engineering; the time devoted to each study was three hours a week. All engineers took Applied Mechanics and Hydraulics, the civils took Roads, and one mechanical and two electricals took Steam Engineering.

In the second term the work with the seniors was in Theory of Railroad Location and Steam Engineering; and with the juniors, in Applied Mechanics, Applied Mechanics Laboratory, and in Masonry Construction, the time for each being three hours a week. Professor Bray was also engaged four hours a week in Steam Engine Design, the student making all necessary calculations for sizes and proportion of parts. A trial test of a compound pumping engine was made by the class in Steam Engineering, all of the work being done by students.

Text-books in all departments of study have been used, accompanied always by notes and explanations.

It is much regretted that the equipment in the departments of Steam, Applied Mechanics, and Hydraulics admits of so little laboratory practice. It is not impossible that students might be employed to construct some of the needed apparatus, they being paid fair wages, and the amount allowed on term bills. The department is fortunate in its facilities for carrying on field work, the extensive grounds of the College affording unusual opportunities in topography.

The following is a tabular view of work in Drawing and Shop Work: —

<i>Subject.</i>	<i>Instructor.</i>	<i>No. in Class.</i>
Freehand Drawing.	{ Prof. Anthony.	1 Sophomore.
		15 Freshmen.
		3 B. S. Course.
Technical Sketching.	{ Prof. Anthony.	5 Bromfield-Pearson.
		17 Freshmen.
Lettering.	{ Mr. Daniels.	5 Bromfield-Pearson.
		17 Freshmen.
Elementary Mechanical Drawing.	{ Prof. Anthony. and Mr. Daniels.	19 Freshmen.
		3 B. S. Course.
Descriptive Geometry.	{ Prof. Anthony and Mr. Daniels.	5 Bromfield-Pearson.
		20 Freshmen.
Elementary Machine Drawing.	{ Mr. Sanborn.	3 Bromfield-Pearson.
		1 Junior.
Elements of Mechanism.	{ Mr. Sanborn.	24 Sophomores.
		1 Freshman.
Kinematics.	{ Prof. Anthony and Mr. Sanborn.	1 Bromfield-Pearson.
		29 Sophomores.
Advanced Machine Drawing.	{ Prof. Anthony.	1 Bromfield-Pearson.
		27 Sophomores.
Machine Design.	{ Prof. Anthony.	1 Bromfield-Pearson.
		10 Juniors.
Advanced Design and Thesis Drawing.	{ Prof. Anthony.	12 Juniors.
		11 Seniors.
Carpentry and Wood Turning.	{ Mr. C. H. Chase.	22 Sophomores.
		17 Freshmen.
Pattern Making and Moulding.	{ Mr. C. H. Chase.	2 Sophomores.
		1 Junior.
Forging.	{ Mr. C. H. Chase and Mr. Moore.	27 Sophomores.
		2 A. B. Course.
Machine Work.	{ Mr. C. H. Chase.	1 Bromfield-Pearson.
		9 Juniors.
Thesis Shop Work.	{ Mr. C. H. Chase.	11 Seniors.

Although Freehand Drawing is now required for admission to the engineering courses of the College, the demand for instruction in this subject must continue for some time. Most

students have little or no preparation in this work, as the demand made by engineering schools for preparation in Freehand Drawing is a late one, and time will be required on the part of the secondary schools to meet this demand.

A special class was formed to enable conditioned students to make up their deficiencies in this subject. Two hours a week during the first term was found to be sufficient to enable all to meet the requirement.

The time formerly given to Freehand Drawing is now devoted to Technical Sketching, and substantial progress has been made in this hitherto much neglected subject. It has also helped to advance the grade of the other drawing courses.

The science courses now require Freehand and Mechanical Drawing, which it has been very difficult to supply. This is due to the difference in requirements made by the several courses, and also to our inability to give the extra time required for this instruction. But this demand will have to be met at an early day.

Two classes in elementary Mechanical Drawing were continued through the year. One of those supplied the regular course for freshman engineers, and the other was designed for special students, including those having some previous preparation in the subject, and those from the science courses.

No material change has been made in the other courses of the department of drawing.

A gratifying result of the past year's work was the systematizing of the courses so as to establish a closer relation between the drawing and shop work. The more complete working out of this plan will greatly increase the educational value of each of these departments.

Mr. Geo. H. Furbish, our former instructor in shop work, left during the summer of '96. He had filled the position since the opening of the Bromfield-Pearson School, and much of the value of our present equipment is due to his experience and labor.

The appointment of Mr. Charles H. Chase to the position of head instructor in the shops has proved to be a very wise one. His technical training, combined with practical experience, has enabled him to cooperate more fully in bringing about the close relation between the departments, to which reference has already been made.

Mr. Chase has taught all the classes in shop work, being assisted only in the forge shop by Mr. R. B. Moore.

The lack of a proper equipment in the machine shop adds much to the labor of the instructor, and it is not now apparent how the machine class of the next year can be accommodated, by reason of insufficient tools. It should also be noted that the senior thesis work consumes more of the instructor's time, and the use of a greater number of machine tools, than any other course in shop work.

Under Mr. Sanborn the subject of Elements of Mechanism was given two periods a week for the first term of the sophomore year, thus allowing thirty-six class hours. It was taken by all sophomore engineers, civil, electrical, and mechanical. They were met in two sections, a total of thirty-one students. The object is to give the student the elementary mechanisms apart by themselves, studying each for the principles of its working, and fixing these by problems. The subject is important enough for all the engineers to receive three hours a week. Two periods a week are too far apart for good work, and too few in amount to do the subject justice. It is desirable to follow up the study of the simple mechanisms by analysis of existing machines, showing how these simple movements are combined to give the complicated and apparently intricate machine.

Mr. Sanborn also gave instruction in Mechanics as follows:—

The time allotted to the subject was three hours a week for the second term of the freshman year, giving fifty-two class hours. All freshman engineers are required to take the subject. There were twenty-one in the class. No text-book on

the subject was used, but the student was directed to refer to as many as he found desirable. Instead of a text-book, an outline set of notes was given. These were explained and enlarged by the lectures. In order to fix the principles studied in the mind, and to cause the student to think for himself on them, a large number of problems was given.

The results obtained last year were much more satisfactory than with the text-books previously used.

Electrical Engineering.— Under the direction of Professor Hooper, the senior class in electrical engineering, meeting four hours a week during the first term, and three hours a week during the second term, carefully treated the subjects of electro-magnetic induction, the mathematical theory of alternating currents, and the generation and applications of alternating currents both uni- and poly-phase. In connection with this work some fifteen hundred pages of standard treatises were read by the class. Two of the students also read Ewing's Magnetic Induction and Jackson's Alternating Current Machinery, and the mathematical treatise of Bedell and Crehore, while two others read a part of Steinmetz Alternating Current Phenomena.

The same class worked three periods a week for the year, partly in the electrical laboratory and partly in construction work at the Bromfield-Pearson School building.

During the first term the junior class in engineering, under the direction of Mr. H. G. Chase, met three hours a week for a general review of elementary principles of electricity, and spent two hours a week in the electrical laboratory.

During the second term the same class, under Professor Hooper, read Thompson's Dynamo Electric Machinery, meeting three hours a week, and spent two hours a week in electrical calculations, besides continuing their work in the electrical laboratory.

Under the direction of Mr. Chase, assisted by Professor

Hooper and Mr. Sanborn, the sophomore class in engineering, numbering about thirty, worked three periods a week for the second term in the physical laboratory on mechanics, sound, heat, and light.

Physics.— Professor Dolbear maintained the program as printed for the year. In Physics I there were ninety students, four dropping out during the year. The attendance was very regular throughout, and the standing good, with the exception of half a dozen. At the beginning of the year the room was provided with elevated seats to enable the students to see to better advantage the demonstrative work upon the table. There was thus provided room for fourteen settees, each with comfortable sitting for five persons, but ninety had to be accommodated. This involved crowding to discomfort and uneasiness. However, by means of chairs and settees general good nature was preserved.

Of course this pressure on the department facilities has its plain significance,— more room should be had. Admission has been refused to several who wished to come for the only reason that there is no room. Division of the class is wholly impracticable on account of the program, and for examination the class has to be divided for that hour into three sections of thirty-five in a section.

The character of the work done has been similar to that of former years. The principal points to receive attention are written upon the board and are copied by all, then the points are explained and illustrated as fully as the resources of the department will allow.

In Astronomy there was a class of thirteen for the term.

In Physics VI a class of seven for a term, and in Physics VII a class of eleven.

In Physics VI there were several from the Divinity School whose names were not counted, as they wished to hear the lectures but could not come regularly.

Lastly, a course of lectures to the senior electrical engineers, on the telegraph, the telephone, and other electrical industries, was given the second term. There were seventeen in this class.

Chemistry.—The advanced courses in inorganic and organic Chemistry, in charge of Professor Michael, were attended by five and four students respectively.

Dr. Bucher gave the same courses on organic Chemistry and scientific German as in the previous year, and these were taken by eleven students in the former course and fifteen in the latter. The experimental work in the organic laboratory was under the direction of Professor Michael and Dr. Bucher, and six students pursued work there during part or whole of the year. Dr. Hartman had charge of the quantitative laboratory, and seven students elected course IV, and five the advanced work in this subject. He also had two students in gas analysis.

Mr. Leighton had a class of seven students in determinative mineralogy. Mr. Leighton was granted the degree of Ph. D. at the end of the year, he having completed the required research work in a satisfactory manner.

Since the occupation of the new laboratory building each year has seen the addition of a considerable amount of new apparatus, and the equipment of the department in this respect is now adequate. The titles of researches that have been finished during the past year are as follows:—

1. A. Michael, on the action of Zinc Ethyl on Citraconic Ester.

2. A. Michael: On the behavior of α β — Dichlorpropionic acid towards water.

3. A. Michael and J. E. Bucher: Action of Acetic Anhydride on Phenylpropionic Acid.

4. A. Michael and W. R. Whitehorne: On the Addition of Hydriodic Acid to Phenylpropionic Acid.

5. A. Michael and W. R. Whitehorne : On α β — Dibromophenylhydrociunamic Esters.

6. V. L. Leighton : On the Action of Sodium Ethylate on α β — Dibromesters.

7. V. L. Leighton : On the formation of Hydrazides.

The work of Assistant Professor Durkee during the past year has been as follows: Chemistry I, General Inorganic Chemistry, has been given to a class of forty-six students, engineers and regulars. All came together for lectures and recitations, but in two divisions for laboratory work. There were twenty-nine students in the division containing the engineering students, a number altogether too large for one instructor. However, the programme would not admit of further subdivision. In connection with the experimental lectures, Inorganic Chemistry, by Ira Remsen, has been used, and for the laboratory work the Assistant Professor's Manual of Experiments.

In Chemistry II, thirty-one students, fifteen engineers, and sixteen regulars received instruction during the first term. While the work of the class, on the whole, has been good, the instructor, on account of the size of the class, has been unable to give the individuals the personal attention that is necessary in laboratory courses. Here, again, the programme could not be arranged for a division of the class. During the second term Chemistry II has been given to three students.

Chemistry III has been given to twelve students during the last term. This, like Chemistry II, is a laboratory course supplemented by lectures. In both courses Hill's Lecture Notes on Qualitative Analysis, has been used. The ground covered by the students in Chemistry II and III has been the same as that covered by previous classes.

A course in the metallurgy of iron has been given, during the last term, to six students. Bauerman has been used as a text-book in connection with recitations.

While Mr. Edwards has not taught, he has been an efficient

assistant in the distribution of apparatus and preparation of laboratory solutions.

Late in the College year it was decided to open a summer school in Chemistry. Considering the very slight opportunity afforded for making the fact known to possible patrons, the response was encouraging. Sixteen students were enrolled. Among them were several who had considerable knowledge of Chemistry, so that the work was, much of it, of an advanced character. The school was in charge of Assistant Professor Durkee, who was assisted by Dr. Leighton. On the whole, the experiment was sufficiently successful to warrant a further trial of it. Indeed, the question has been raised among some of the teachers in other departments, whether the scope of summer teaching may not be increased with profit. There are, doubtless, many students in the undergraduate department of the College who would gladly avail themselves of the opportunity of the long vacation to increase the number of term hours to their credit, and so shorten the time required for their degree. There is also abundant evidence already at hand that there is a field outside of the College, among teachers and other studious persons, from which students can be drawn for a period of six weeks to make use of the advantages which the College affords.

Biology.—The courses given by Professor Kingsley during the year have been the same as in previous years, except a half-year course given by Mr. Lambert. The attendance upon these courses was as follows:—

	Number registered.	No. r'e'ving credit.
Biology I. General Biology	20	15
Biology II. Invertebrate Zoology . .	11	9
Biology III. Vertebrate Zoology . .	17	14
Biology IV. Physiology	8	6
Biology V, VI, and VIII. Adv. work	5	5
Botany	17	14

In Biology I, Mr. Winslow assisted with the laboratory

work with a success which merits the warmest praise. Mr. Lambert was equally successful in the botanical work, and the students praised the clearness of his lectures.

Besides the regular biological work, a half-year course was given in Scientific German, attended by fifteen students. For the text Wiedersheim's *Der Bau des Menschen* was read, this book being selected since so many of the class were intending to go into medicine. The work was all well done.

Three graduate students worked in the department during the year. Mr. Lambert, for three years a graduate student, passed his examination, and upon a thesis upon "the development of the heart and pericardium in the Batrachia," received the degree of Doctor of Philosophy at Commencement. Mr. Winslow, a second-year student, has about finished a paper upon the cartilaginous skull in the lower vertebrates, which will be published shortly. Miss Ellen E. Shaw conducted researches upon the cartilage skull in reptiles and birds.

At the Commencement in June, Mr. William Willard, of Iowa College, was granted a biological fellowship for the coming year.

There has been little change in the material equipment of the department. The laboratory fees have been sufficient to meet the running expenses of the department and to add a few things to the permanent facilities of the laboratory.

The department library has shown a very gratifying increase during the year, and on August thirty-first contained eight hundred and seventy-one volumes and twenty-two hundred and thirty-eight pamphlets and parts of volumes. One new book-case was built during the year to accommodate the increase, which amounted to forty volumes and four hundred and four pamphlets and parts. Of the additions, two hundred and thirty-three were received in exchange for Tufts College Studies, one hundred and fifty-nine by purchase, and the rest from the Essex Institute, Dr. B. T. Robinson and J. S. Kingsley. Two important journals were added to our files by a subscription among the scientific students.

No numbers of the Tufts College Studies have been issued since the last report. There is material on hand for a good-sized number, which it is hoped will be issued at an early date. Since Professor Kingsley took charge of the laboratory five years ago, eighteen papers have been issued from it, an aggregate of three hundred and twenty-six pages, illustrated by seventeen plates. There is little money expended for which the College gets a greater return than from these Tufts College Studies, and it is to be hoped that, in the future, all the work from the department can be issued in this form.

Geology.—The courses in Mineralogy and Geology were carried on as usual by instruction given orally, illustrated by specimens which the students have the privilege of handling and asking questions about until the natural history and composition of the minerals are well understood.

For this purpose there are arranged geological and mineralogical specimens in cases covering one side of each of the lecture rooms. The specimens are less liable to injury than if they were taken out and transported a considerable distance to another room. Besides the above-mentioned specimens of native minerals and fossils there are large collections of foreign minerals and fossils in the gallery of the main exhibition hall in the third story of the Museum, to which students have free access at other times than lecture hours.

Modern Languages.—The work in the department of Modern Languages during the year 1896-97 followed in general the same lines as in the years immediately preceding. Professor Lewis had most of the French classes more directly in charge. The usual synoptical table of work performed is herewith appended.

The Wade Professor had under his instruction two of the more advanced of the courses in French, IV and VI, of which the latter was not given the preceding year. Five students

in all — one of these a graduate — took the higher of these for the first term, and three continued through the year.

The course in Italian — which by an established custom is now given on alternate years — was also offered and taken by twelve students, an unusually large number. The class was composed of excellent material, hence an unusually large amount of work was accomplished.

It was only by a favorable combination of circumstances that it became possible to give these two courses. Added to the exorbitant number of those already given by the Professor, they would have composed a program of twenty-four hours of class-room work per week, a wholly impossible task considering the amount of somewhat advanced work involved. Fortunately, Mr. O. F. Lewis volunteered to relieve the pressure by taking German IV in addition to German II given by him in 1895-96. With a confidence founded on a knowledge of his attainments and upon his excellent work as an instructor in the preceding year, this class was committed to his charge with great readiness and most satisfactory results. An unusual amount of ground was covered with evident enthusiasm. Mr. Lewis also conducted, as in the preceding year, a course in advanced composition — German VII — a very valuable addition to the curriculum. The class in Scientific German in the department of Biology was again successfully conducted by Dr. Kingsley. Circumstances did not favor the formation of a class this year under the auspices of the department of Chemistry.

Prof. L. R. Lewis and Instructor Earle had charge of the subjects in French numbered 1, 2, 3, and 5 in the catalogue statement of the department's work, as well as of the three courses required in the engineering department. The details of the work, together with the numbers of students, will be found in the synoptical table.

TABULAR VIEW OF WORK IN MODERN LANGUAGES.

COURSES.	INSTRUCTORS.	No. in Class.	
German 1.	Prof. Fay.	48	Joynes-Meissner's Grammar, Parts I and II, with Lewis's Exercises. Im Zwielficht, II; Tales from Hauff, pp. 1-46.
German 2.	Mr. O. F. Lewis.	19 (14)	Der Fluch der Schönheit; Der Schwiegersohn; Die Nonna; Der Trompeter von Säkkingen; at sight from Plautus und Terenz. Composition: J. M. Grammar III. with the "Continuous Exercises," and several themes.
German 3.	Prof. Fay.	12 (17)	Ekkehard (350 pages). Minna von Barnhelm; Hermann und Dorothea; Die Jungfrau von Orleans; Wilhelm Tell, Acts I. and II. (Class increased from Ger. 2 at mid-year.)
German 4.	Mr. O. F. Lewis.	13	Maria Stuart; Gustav Adolf in Deutschland; Wallenstein; Die Braut von Messina; Egmont; Goetz v. Berlichingen; Italienische Reise; Heine's Poems.
German 5.	Prof. Fay.	5	Course in Goethe and Lessing: Tasso; Iphigenie; Die Wahlverwandtschaften; Lyrics; Nathan der Weise; Emilia Galotti; Laocoön; and about one half of Hamburgische Dramaturgie.
German 7.	Mr. O. F. Lewis.	7 3	First term. Stein's German Composition, entire; three themes. Second term. White's German Composition; ten themes. (Twice a week through the year.)
German C.	Prof. Kingsley.	11	Wiedersheim, Der Bau des Menschen, 140 pages. (One recitation of two hours' length each week.)
Italian.	Prof. Fay.	12	Grandgent's Grammar and Composition, Parts I and II, Cuore, 300 pages. Dante, Inferno complete; Purgatorio Cantos I-X, selected cantos from the remainder of the Divine Comedy.
French 1.	Prof. Lewis and Mr. Earle.	21	Grandgent's Grammar with College Exercises; Super's Reader; Le Voyage de M. Perrichon; La Prise de la Bastille.
French 2.	Prof. Lewis and Mr. Earle.	30	Grammar and Composition: Macmillan's (Second Year), with brief weekly themes; a systematic vocabulary of 800 words and idioms. Translation: Moi; Contes et Nouvelles (Bercy); Le Conscrit de 1813; Le Gendre de M. Poirier.

COURSES.	INSTRUCTORS.	No. in Class.	
French 3.	Prof. Lewis and Mr. Earle.	37	Modern Prose: L'Expedition de Bonaparte en Egypte; Les Origines de la France Contemporaine; Cinq-Mars; Seventeenth Century Drama: L'Avare; Mithridate; Britannicus; Andromaque; Polyeucte.
French 4.	Prof. Fay.	14	Crane's La société française au XVII ^e siècle; Walter's Classic French Letter Writers; Voltaire, Merope, Zaïre, Histoire de Charles XII; Morceaux choisis des classiques françaises du XVIII ^e siècle. Various sketches from the Biographie Générale.
French 5.	Prof. Lewis and Asst. Prof. Wade.	8	The Romantic Movement: Lyrics of Lamartine, de Musset and Hugo; Hernani; Ruy Blas; Selected Essays from Sainte-Beuve (Effinger); Selections from Chateaubriand. Contemporary Prose: Bourget; Leune's Difficult Modern French. Literary History from Rousard to Hugo (Petit de Julleville).
French 6.	Prof. Fay.	5 (3)	General History of French Literature (Denrogeot) and numerous articles from Revue des deux Mondes and Biographie Générale. The 16th Century; Darmesteter and Hatzfeld, Le XVI ^e siècle en France.
ENGINEERS. French 2.	Mr. Earle.	14	Grandgent's Grammar, with College Exercises. Confessions d'un Ouvrier; Bigarreau; Pierre et Camille; Trois Contes Choisis (Daudet); L'Hydraulique (Marzy), about 200 pages.
French 3.	Mr. O. F. Lewis.	21	Le Voyage de M. Perrichon; Hernani; Les Sciences; Colomba; Le Gendre de M. Poirier; La Poudre aux Yeux; Scientific French Reader (Herdler); Mlle. de la Seiglière.
French 4.	Mr. Earle.	12	L'Avare; Tartuffe; Cinq-Mars; Pierre et Camille.

History. — The department gave, during the College year, the following subjects: General European History (History I) to thirty-seven students, American Colonial History (History IV) to twelve students, Political and Constitutional History of the United States (History V) to five students, and the semi-nary course in American History (History VI) to three students. The instructor also gave a course in Political Science, of

which a report is given in connection with that department. The work of the year was in general satisfactory. The judicious expenditure of small appropriations for books and charts enabled some of the subjects to be studied to better advantage than hitherto, but much is still needed in the way of working equipment to put the department upon a satisfactory basis.

Among pressing needs of the department may be mentioned a working set of full and accurate physical and historical wall maps. The charts at present in use are helpful, but do not fully meet the demands of college work. Several books are needed for the ordinary work of each of the classes, outside of special investigation. A well-selected illustrative collection of photographs and lantern slides would greatly increase the interest and profit of the study of history.

A suggestion made in previous annual reports is here renewed: That a closer union and more systematic organization of the department of History, and of that now known as Political Science, would benefit both departments and bring their work more into line with that done in other colleges that offer facilities for study equal to ours. Whether anything can be done in this direction with the present limited teaching force is open to question, but it seems to be possible to make some progress in the desired direction, and thereby to prepare the way for future expansion when the means of the College shall enable it to give to these important departments the facilities demanded by modern scientific progress.

The action of the Faculty in the adoption of the new entrance requirements has put Tufts College in the front rank with those colleges that have determined, in harmony with the best educational thought, to make the entrance requirement in History a substantial one, demanding really thorough and scholarly preparation in place of the "cram" allowed by the former system. Many schools are prepared to meet the new requirement at once. Many are not, and a new adjustment of their work will be necessary. The new requirement accords,

however, with educational common sense, and may confidently be expected to justify itself in time. The acceptance of history on equal terms with language as adequate preparation for college will assist quite as many students, who have hitherto been debarred from entering college from the better class of English high schools, as it will hinder from those schools still bound by old formulæ and traditions. The exact effect of the new requirement will be tested for the first time in 1899, by which time some schools, at least, may be expected to have adjusted themselves to it.

Music.— The courses numbered 1, 2, and 4 in the catalogue were given. The last named occupied three hours a week for the second term; the others, the same number of hours throughout the year.

In Music 1, as during the previous year, Jadassohn's Manual of Harmony was the principal text-book. The exercises contained therein, together with many from other sources, were written and were corrected and discussed in the class-room. The analysis of standard compositions was carried on extensively, with the idea of making practical application of the knowledge acquired concerning chord-structure and modulation. The class numbered eight.

Music 2 was given for the first time, and was taken by two seniors and one graduate student. The essentials of counterpoint, including imitation in its strict and free forms, were treated in lectures and illustrative exercises. The members of the class were given practice in the treatment of themes of various characters, and much facility in the solving of different contrapuntal problems was developed. The work of Bach naturally formed an important subject of collateral and illustrative study.

The class in Music 4 numbered fifteen. A general survey of the History of Music was taken, special attention being given to the last three centuries. Copious collateral reading

was prescribed and three theses upon single periods or individual composers were required.

English Literature and Oratory.—The total enrolment reached one hundred and seventy-five names. During the year the experiment was tried of including the divinity students in the regular college classes studying the elements of Oratory, thus affording opportunity to speak before a larger number. In the two divisions of the class beginning Oratory there were four divinity students, and thirty-four from the College of Letters. Seven advanced students elected to continue the subject in the line of dramatic reading, and did good work, presenting in the spring, with members of Oratory I, a public program of readings. A class was formed, also, in the study of masterpieces of senatorial Oratory, the careful examination of Burke's great speech on Conciliation with America being followed by individual analysis of other speeches, and by the preparation and public delivery of original arguments. Seven students carried this work to its due completion. All these classes in Oratory met one hour a week for the year. In addition to the two public exercises already indicated, the usual Goddard readings were held in June. By vote of the Faculty a change in the method of selecting representatives for the Commencement platform promises to encourage the practice of public speaking by thus further emphasizing its importance. It should also be stated that the students themselves now carry on, independent of the department, a debating society that holds weekly meetings under the form of a legislative assembly.

In the class making a survey of the field of English Literature there were forty-three students, nineteen students of engineering, one divinity student, and twenty-three from the College of Letters. Mr. Earle, Mr. Wade, and Mr. Whittemore rendered in lecturing before this class, which met one hour a week for the year, the same valuable assistance as last

year, and besides, Dr. Knight kindly read to the class his admirable lecture on Ruskin. In the class studying American Literature thirty-four students (including one divinity student) accomplished the usual work, covering three hours for the year. The works of Shakespeare were studied by fourteen students during the first term, and by the same number during the second term, the class meeting three hours a week. Thirteen plays were read in each term, the aim at the beginning being to accustom the students to existing peculiarities of language, and later, gradually to lead to a purely literary study of the plays. Mr. Whittemore conducted this class during the second term, and during the first term directed thirteen students, three hours a week, in the appreciation of Browning with appropriate collateral reading. Mr. Earle read with two advanced students, three hours a week for the year, specimens of Anglo-Saxon prose and poetry, besides reading Beowulf with one student three hours for the year. Unsought expression of appreciation of the work in Anglo-Saxon has been made by students taking it. A class of eleven members, meeting three hours a week for the second term, followed the Romantic movement in England, with casual reference to contemporary France and Germany. Finally, three major students in English Literature met one hour a week for the year, considering, according to the seminary method, the development of the English novel, the work involving much reading, regular reports and discussion, and a piece of writing at the close, creative or critical.

English.—In the department of English students of the College of Letters were under instruction during the year ending June 16, 1897, as follows :—

45 Freshmen, one hour a week for the year. Composition, lectures, discussions of papers. PROFESSOR SHIPMAN.

26 Freshmen (B. S. courses), three hours a week first term. Lectures and extemporaneous composition. MR. WHITTEMORE.

35 Sophomores, three hours a week for the year. Lectures, readings, and themes. MR. WHITTEMORE.

26 Sophomores (B. S. course), three hours a week, second term. Study of specimens, of style, lectures, and themes.

MR. WHITTEMORE.

25 Juniors, three hours a week, first term. Lectures, daily themes.

MR. WHITTEMORE.

16 Students, one to three hours a week for the year. Individual work; each student met one half an hour a week for discussion of essays.

PROFESSOR SHIPMAN.

English has this year been made a major department, additional courses have been offered, and the work will now be more strictly consecutive and systematic. Certain changes have been introduced with a view to making work in English the same for all students during the first two years. English requirements for admission are the same for all, whatever the degree they enter for. The same number of hours is now required of all freshmen and sophomores. There would seem to be no reason for maintaining separate classes for students on B. S. courses. By help of the program committee, the instructors in English will try to carry this desirable change into effect for the coming year. They will also welcome to later optional and elective subjects any students who can add these to their required work for the B. S. degree. All English after freshman year will be counted in the requirement for a major subject.

To return to the work of the year just ended, it may be said that in all composition classes, except English I, each student has been met by the instructor, once a week, or once in two weeks, for consultation on the papers submitted. This is in addition to discussion of their work before the classes.

Philosophy.—During the year ending June 16, 1897, students in the College of Letters were instructed in the following subjects: by Professor Shipman in Psychology (twenty-four students, first term), in Ethics (four students, first term),

in Logic (sixteen students, second term), in Experimental Psychology (four students, second term); and by Mr. Cushman in History of Philosophy (eight students, the year), in Metaphysics (four students, first term), and in Subject 11, Kant and Schopenhauer (four students, second term).

The year may be regarded as a period of transition in this department. Mr. Cushman has been able to give six hours of instruction through the year, and in addition to the course in History of Philosophy has offered advance courses in Metaphysics and readings in Kant. The most important change carried into effect has consisted in making Philosophy a major department. It is expected that next year both Psychology and Ethics will be transferred to Mr. Cushman, who will give his entire time to instruction, and put the work into systematic shape. The indications are that the greatly increased advantages for the study of Philosophy will be heartily welcomed by many students. It has already been selected by some as their major subject. The value to the College of this new departure can hardly be overestimated.

Mr. Cushman desires to emphasize the fact that the department is laboring under the disadvantage of a small library of philosophical books, and that it has many needs which cannot be met until its friends provide an endowment or other permanent financial aid. He also urges the importance of making a course in Pedagogics possible, that the large number of teachers graduated each year should have some systematic training for their profession.

Library.—The accessions for the year have been eight hundred and forty-five bound volumes, twelve hundred and twenty-nine pamphlets, and five hundred and forty-two numbers. Sixty-one volumes have been acquired by exchange, and one hundred and eighteen by binding. Col. T. W. Higginson has manifested his continued interest in the Library by the gift of twenty-five volumes. Dr. Samuel A. Green has

avored us with a gift of one hundred and twenty-three volumes, and through him as librarian of the Massachusetts Historical Society we have received fifty-one volumes, forty-one pamphlets, and seventeen numbers. Mr. Albert Metcalf, in the furtherance of his purpose to foster and strengthen the department of Music, has given one hundred and nineteen volumes and three pamphlets relating to musical subjects. In addition to this he has purchased a musical library of great value, consisting of thirteen hundred volumes, besides a great quantity of unbound musical sheets and periodicals. This collection he has deposited at the College, fitting up a room here for its reception, where it can be consulted by musical students. It is expected that ultimately the collection will be incorporated with the College Library. The Librarian notes with satisfaction an increase in the circulation over the previous year, and a growing tendency to consult the books in the Library itself. The whole number of bound volumes at present in the Library is thirty-five thousand eight hundred and sixteen. This does not include the library of the Universalist Historical Society, deposited with the department library of the Divinity School, comprising something over three thousand volumes, nor the musical library of Mr. Metcalf above mentioned. Altogether there are forty thousand volumes accessible to students.

Political Science.—Two half-year and two full-year courses were given by the President of the College. Political Economy is a full-year subject, although engineers and divinity students are not required to take it beyond a single term. The class at the beginning of the year numbered nearly fifty, too large to permit of any other form of treatment than by lectures. The subject was so dealt with that those whose period of study was limited to a term might have a tolerably complete survey of the economic field. In the second term, when the class did not number over thirty, freer methods were employed; stu-

dents were put upon lines of investigation and topics were treated more in detail. The subject of law comprises two single term courses. Nine students elected the subject during the first term. Ancient Law was first dealt with, using Maine's work as a basis. The course consists, however, largely of lectures and expositions. A few weeks in the latter part of the term were devoted to a study of the Constitution of the United States. The study of International Law followed in the second term. The class was somewhat larger than in the previous term. Unusual interest and not a little enthusiasm was manifested in the class-room in dealing with the topics which came under discussion. The other full-year course is designed for research, in which the student, with the approval and under the direction of the head of the department, chooses a particular line of investigation and embodies the results of his study in a thesis. Three students did very creditable work in this course.

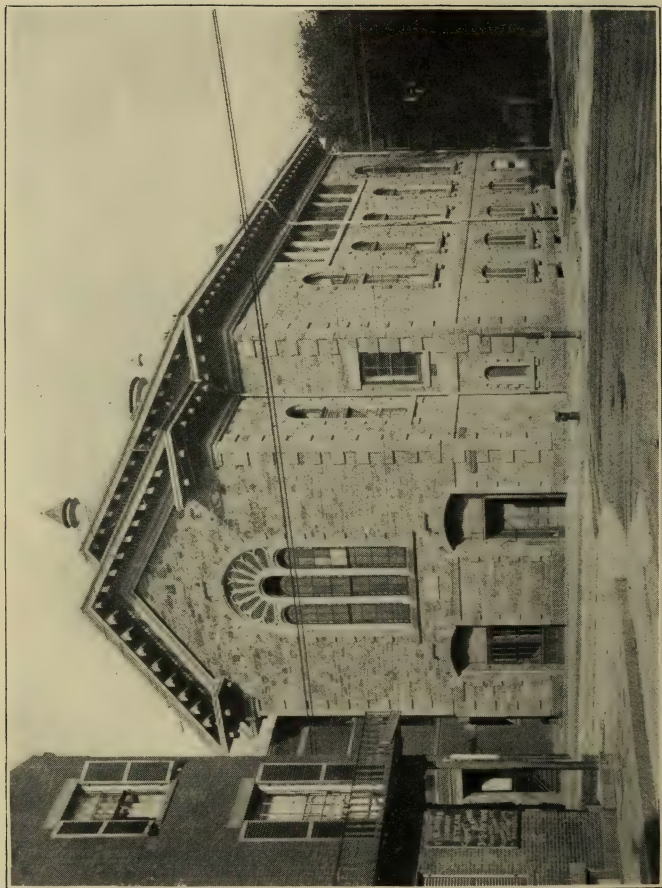
Mr. Start, instructor in History, gave to four students a course in Political Science and Comparative Constitutional Law (Political Science V), which proved so successful that it is likely to be continued as a permanent part of the Political Science programme. The work was based upon Wilson's *The State*, and Burgess's *Political Science and Comparative Constitutional Law*, with collateral reading from other authors. Following Burgess close studies were made of the constitutional law of France, Germany, England, and the United States, after the scientific basis of the state and government, and the growth of political theory had been considered. Toward the close of the year other constitutions were assigned to members of the class for analysis and commentary. The work was carried on by informal lectures, recitations, and discussions, with some written work. This is necessarily somewhat advanced work, requiring a good basis of historical and political knowledge, and hence is not likely to attract large classes; but it may always be pursued with great profit

by a selected number of students, especially those who are to enter the public or semi-public professions.

College Pulpit. — With very few exceptions, the Sunday service was conducted by the President in person, the effort to obtain desirable exchanges being somewhat relaxed. The number of students attending Sunday Chapel is not so large as could be desired. A considerable number of the student body, constituting more than a majority of the College, are within easy reach of their homes, and avail themselves of the opportunity to spend Sunday with their parents. Many of them attend churches of the denominations with which they are respectively connected in the neighboring cities of Medford and Somerville, or in Boston. The congregation is supplemented by representatives of the families that reside contiguous to the College. There is not, however, the social bond or the bond of common interest which binds people in an ordinary parish together. A lack of the warmth of feeling and earnestness of purpose which are essential to the higher satisfaction arising from public worship is manifest. How to overcome this drawback it is not easy to say. Sometimes it seems as if the conditions are such as to put the evil beyond remedy. Still it would be interesting if the experiment could be tried of bringing men of eminent pulpit ability to the College for two or three weeks at a time. If this could be done, and if, at the same time, the services could be enriched by music and ritual, it would seem as if a new interest might be created. Daily morning prayers are well attended. The chapel is usually well filled. The brief service appears to command the hearty interest of all. So far, no serious objection has ever been made to it because, in a way, it is required.

E. H. CAPEN.

TUFTS COLLEGE,
September 16, 1897.



TUFTS COLLEGE MEDICAL SCHOOL.

Appendix.

THE MEDICAL SCHOOL BUILDING.

Description of the Building.

To meet the demands made by the establishment of the Medical School, the church edifice, at the corner of Shawmut Avenue and Rutland Street, had to undergo a complete change and to-day all that remains of the old structure are the four walls and the staircases leading from the rotunda to the second floor. Within there is nothing to suggest a church except the main stairways at the front. The interior, new in all its parts, presents not a vestige or suggestion of anything save a place for the study of the sciences.

The new quarters are models in every way, and the arrangement is the outcome of careful study and investigation on the part of a committee of the Faculty, which visited the leading schools of the country. The exterior of the building remains much the same as it has always been, excepting where windows necessary for the proper lighting of the many rooms have been cut in, and where the ventilating apparatus protrudes upward from the roof. The walls of pudding stone, with granite trimmings, present a solid and substantial appearance. Within the appearance is in keeping with that of the exterior.

Not including the basement, the building has been divided into four floors, and each floor is divided into several rooms, all large and filled with excellent natural light, and each having its distinct use. The first floor is divided into five large and two small rooms, beside a large rotunda, which is entered from Shawmut Avenue. This rotunda is to be used as the reception room, and contains the janitor's room, clerk's office, and the post-office. On either side the large principal stairways lead to the second floor.

From the hall a large corridor runs almost the entire depth of the building. The first room on the right of this corridor is the library and museum, and back of this is a large recitation room. On the opposite side of the corridor from the library is the men's lounging

room and a toilet room, and in the rear is a large room which is devoted to study only.

At the foot of the corridor is one of the new features in medical schools of this section, the College Dispensary. This department consists of three rooms, the largest a waiting room for patients, and the other two of equal size, being one for the surgeon and the other for the physician.

The finish on the first floor is neat and serviceable. The walls are sheathed part way with North Carolina pine, and the plaster is painted in soft colors. The same finish prevails on all the floors.

The second floor is mainly devoted to the uses of the women students, and their rooms are similar to those furnished the men on the lower floor, consisting of toilet, lavatory, study, and waiting rooms.

On the right of the landing on this floor is a large room which is to be the laboratory for the pathological, physiological, bacteriological, and histological departments. The purpose of the Faculty in placing the four departments together is to secure the advantage of a large, well-lighted and ventilated apartment, which is necessary for the carrying out of the delicate work in these departments. The room is supplied with stone sinks and specially imported apparatus. Leading from the laboratory is a private bacteriological room, especially fitted with stone floors, etc., where the cultures will be kept and prepared.

The third floor contains three large apartments, the dissecting room, general and medical chemical laboratory, and the amphitheater, beside several small rooms. At the front, and occupying a comparatively small section, is the amphitheater. This is well arranged and has seating accommodations for two hundred and twenty. The seats reach from the floor up into the fourth story, and are so arranged that the student sitting at the farthest point above the demonstrating table, eighteen feet, has a perfect view of all that is going on. The amphitheater is lighted from above, and there are two cranelike arrangements on either side of the table, by means of which electric light is thrown upon the subject if needed. Separate entrances are provided for men and women. The finish of the room is of Southern pine.

Back of the amphitheater and running the full length of the floor are, on one side, the dissecting room, and on the other the chemical laboratory. The dissecting room is large and particularly well equipped. It is high studded, and an abundance of natural light is secured by means of numerous windows situated high in the walls,

through which the light falls on the operating tables. The tables are placed lengthwise in the room, and upon the side walls are many shelf tables for use in minute examination of the parts of the material. The floor and the tops of the dissecting tables are of granolithic, assuring perfect cleanliness, and this is further secured by the special arrangements for flushing.

In the rear of the dissecting room is the apartment set apart for the Demonstrator. This room is in communication with the cold storage in the basement by means of a lift. The Professor of Anatomy has a private room in front, where the subjects are prepared for demonstration before the class. This room connects with the amphitheater, and, like the others, is fitted up with all the modern contrivances.

Across the corridor from the dissecting room is the general laboratory, which occupies a space about equal to that of the dissecting apartment. This room, too, is well supplied with natural light, and the needed ventilation is secured by means of specially constructed apparatus, consisting of large hoods of metal so erected as to carry off all the fumes and vapors directly to the main ventilating shafts. The desks are erected closely, and run the full width of the room. The apparatus is all new and modern, and affords every desired facility for the work. At either end are the private laboratories, one for the Professor of General Chemistry and the other for the Professor of Medical Chemistry.

The fourth floor is devoted to storage purposes, though at the front the space is occupied by the upper tiers of amphitheater seats. In the basement are the cold storage and heating plants, both of which are adequate to the needs of the school.

Opening Exercises.

The opening exercises were held in the amphitheater. President Capen made the address of welcome, and extended a cordial greeting to the friends of the College who were present.

President Capen's Address.

Ladies and Gentlemen :—It is my grateful privilege to extend a cordial welcome to all the friends who have honored us with their presence here this morning. The Trustees of Tufts College feel that the completion of this building and setting it apart for the uses of the Medical School constitute an occasion of such importance as to merit some slight public recognition. We are not, to be sure, just now

entering for the first time upon the experiment of giving medical instruction. That experiment has been going on with the most gratifying evidences of the public approval and support for four years. This is our justification for providing, at considerable expense, facilities such as those branches of learning which we are trying to impart require. Though we have but recently entered this field of effort, we have not thought that any apology is due from us for so doing. The field was here and we have pitched our tent in it. On several accounts we seemed to be invited to this work.

In the first place, almost from the beginning of its history, Boston has been, in a peculiar sense, the educational centre of the country. This has been its predominant characteristic, and, although with the lapse of years, other interests incident to its growth have been multiplied and extended, it is still the leading feature of its life. Both climate and soil may be said to favor every conceivable legitimate educational enterprise. The city has been known in the past for her devotion to the arts, for the excellence and variety of her fabrics, and for her commerce, which not only meets domestic needs but embraces the ends of the earth. Nor is there any evidence that the sceptre in any of these departments is passing from her hands. But, high above these great interests, more important than any of them, and filling a larger place, is her devotion to the pursuits of learning. Nowhere in the world, therefore, may a new school with a lofty aim and consecrated purpose more appropriately open its doors and invite those who are in search of knowledge to come in and receive what it has to bestow. Indeed, it may be doubted whether an institution, situated as Tufts College is, within the limits of the "greater Boston," in view of its chartered rights and other prerogatives which it has received from the public, is not under an obligation to do its part with others in meeting the most important phases of public need, and maintaining the prestige and glory of the State.

Then, too, an additional reason for the establishment of a new Medical School is the fact that there exists here in abundant measure the material which is the basis of medical knowledge. In no department of human investigation has the new learning wrought such marvelous changes and effected such far-reaching and beneficent results as in medicine. Within the last three or four decades the laboratory has done more to reveal the nature and causes of disease and point out its remedies than centuries in the previous experience of mankind. Moreover, the hospital and the dispensary are the most important of all laboratories. Notwithstanding the contributions which the anatomist, the physicist, the biologist, and, above all,

the chemist, may make to the subject, there is no place where disease can be so profoundly and accurately studied as by the bedside of the patient, under the direction of a competent master. Therefore, in a great city, where a million people drawn from every quarter of the earth almost daily congregate, where there are not only great institutions of healing maintained at the public expense, but private hospitals and dispensaries almost without number, affording opportunities for observation and experiment far beyond what can be utilized by any single school, or, indeed, any half-dozen schools, affords the most perfect opportunity for securing the highest professional equipment. Our School is here to share in some of these privileges which this great city possesses.

Again, this is almost the only School in New England, devoted to the regular order of practice, that opens its doors to women on the same terms as men. The time has gone by for discussing the propriety of women devoting themselves to the practice of medicine. We cannot now raise the question whether women have the requisite qualities for the successful physician, whether the subjects embraced in medical investigation are not too indelicate for the refined instincts and tender sensibilities of women, and whether they have the steadiness of nerve, the requisite self-control, and the fertility of resource, demanded by great exigencies in both medical and surgical cases. These questions have all been answered in the most effectual way possible. Women have entered upon the work. They have become both physicians and surgeons. They have shown their ability in the face of prejudice, and demonstrated their skill and fitness under circumstances of the gravest difficulty. They have shown, also, that there is a place for them. Their services are in constant and growing demand, both because they are physicians and because they are women. But, since women are to practise medicine, no argument is needed to prove that every essential facility should be afforded for proper preparation for their work. The opening of the other departments of Tufts College five years ago to women equally with men seemed to make a logical demand upon us to do something to include them in medical training. The character of the School we have set up, therefore, has been determined by these conditions.

Finally, let me say, there seemed to be room on other grounds for this undertaking. Beginning with a membership of about ninety, the number of students has steadily increased until we have more than doubled that number. Nor does it appear to be any mere local or transient interest that has given us this patronage. Students have come to us not only from all parts of New England, but from

the most distant part of this country and the world. Moreover, those who have received their training here have not sought to remain under the shadow of the gilded dome of the State House, but they have scattered widely. Many of them have gone into distant states, and some have crossed the sea in the service of humanity. A new school, not burdened by embarrassing traditions, and able, by reason of the comparatively light expense to which it has as yet been subjected, to make its charges moderate, has seemed to make an appeal that has gone straight to the hearts of a considerable body of young men as well as young women. All this encourages us to believe that there is room for us, that we are not only meeting a present want, but a want that will continue to be felt with increasing force in the future. Let me add that we are not here in any spirit of rivalry; nor are we trying to encroach on anybody else's preserves. So far as we know, we have not drawn students from other schools,—at least we have not tried to draw them. Our purpose will be to cultivate our own field.

Let me say by way of conclusion that we mean that our work shall be thorough and modern, meeting the full demand of the age in which we live. The work which Tufts College has done in other departments, the standards it has set, the scholars it has trained, the public men it has raised up, and the success it has achieved, should be a guaranty that inferior work will not be tolerated in her Medical School. The able corps of instructors already enrolled in service here should convince every one that it means to have the best. Of course, we invoke the patience of our friends. The School can hardly come at one bound to perfection. It will take a little time to get adjusted to our environment and to organize and perfect our forces. But this building which we have invited you to inspect, so thoroughly fitted up and equipped to meet the ends of scientific and practical study, will be a mighty help in the attainment of our ideals.

It does not, however, belong to a layman like myself to speak the word of this occasion, therefore I have the pleasure of presenting to you now the eminent surgeon and specialist in gynecology, Dr. Ernest W. Cushing.

Dr. Cushing's Address.

Mr. President: — It affords me the greatest gratification to salute this distinguished assemblage on such an auspicious occasion as the dedication of this noble building to the instruction of youth, the advancement of science, and the service of suffering humanity. On behalf of my colleagues I have the honor of welcoming to these halls

the Corporation and Faculty of the great institution of which we are proud to be a part, the representatives of other noted seats of learning, who signify their sympathy with us by their attendance, and all our other friends and guests, in authority in state or city, or prominent in medicine, religion, law, literature, art, and all charitable enterprises, whom I see before me and who have honored this meeting with their presence. And in fact we have abundant reason for rejoicing on this day, for it represents the realization of desires long cherished, and of hopes long deferred; the reward of struggles, often desperate, and of sacrifices quite unknown; the acquisition of the instrument of present usefulness, and the means of future development. We have wandered homeless, working at the greatest disadvantage, but always with a high ideal in our hearts; often suffering from misunderstanding and subject to depreciation as an ephemeral medical school existing only on paper, we are now installed in walls of enduring granite, and lo! it shall be said of us, *O fortunati quorum jam moenia surgunt.*

If, however, we thus feel that we are fortunate, it is because we see here the promise and potency of a great public advantage; and it is opportune to consider the importance to the community of sound medical instruction, for every medical school has high and solemn obligations to fulfil, and unless it does its duty it is a detriment and a malediction to the community and not an advantage and a benefaction. It seems almost impossible to make even intelligent persons comprehend the necessity that the members of the medical profession should be competent, learned, and honorable. Men who would not buy a horse except of a reliable dealer, who will search with anxiety for a workman competent to repair a leaky roof, will entrust the safety of their sick children and the honor of their wives and daughters to a mere charlatan of whom they know little more than the name which they see on his doorplate. The gravest responsibilities imaginable rest on the medical adviser; for health or sickness, life or death, often depend on the skill, knowledge, and judgment of the physician or surgeon. For the state as a whole, also, the importance of the services of the medical profession is tremendous, little as it is now appreciated.

All questions affecting the certification of birth and death, the most important problems of public health and the repression or extinguishment of conflagrations of epidemic disease, the prevention and disclosure of many crimes, such as poisoning and homicide, the determination of insanity, the defence of the unborn, the safeguard of the living, the establishment of the soundness of mind of the dead

—all this and more the state expects and obtains of a profession which until recently it has ignored. In truth, then, we have high and solemn responsibilities in undertaking to carry on a school which shall train the aspirants for degrees in medicine, which shall send out those who may cure or kill, protect or plunder, guard or seduce, according to their ability, their honesty, and their education. And I say without hesitation that Tufts is prepared to respond nobly to all the grave demands of its high trust.

First, as to the instrument, —for it is clear that, no matter how high our intentions may be, good scientific work cannot be performed without proper appliances, — you see here this great building, admirably arranged, not only with lecture halls and recitation rooms, library, museum, and dissecting room, but also with spacious laboratories for instruction and work in chemistry, physiology, histology, bacteriology and the other developments of exact modern science, on which is founded the whole superstructure of the medicine and surgery of the present day. I need not tell this audience of the great changes which have recently taken place in the whole conception and theory of disease; as the element of mystery has departed, and all acute diseases are attributed to infection by living organisms, while most chronic diseases are recognized as the remote sequence of previous acute maladies, the science of medicine emerges from the ocean of vain and conflicting theories, so that at last we have solid foundations on which to build the temple of our art.

If, therefore, the medical man of the future is to be a practitioner of a science, his education must be founded like that of all scientific men, on earnest work, under competent instruction, in well-equipped laboratories, such as we see here provided by the sagacious liberality of the Trustees of our University. I use the last word advisedly, for I submit that with the addition of the School of Medicine to its other branches of instruction, our Alma Mater has become, and should be called a *university*, although its legal title as incorporated is Tufts College, just as is customary in regard to the titles of both of the greatest universities in the country, the legal name of each of which is college.

We have, then, a suitable building, an adequate equipment, abundant financial support, and the right to confer degrees in medicine; but all this does not make a medical school worthy of the name; for it is written, “except the Lord build the house they labor in vain who build it,” and without a high and earnest desire and purpose to give the best and most thorough instruction obtainable, the excellence of the building would be but a snare and a delusion, for the deception

of the students and the injury of the community. But I am proud to say that the President, the Corporation, and the whole Faculty of this School are thoroughly united, and entirely harmonious, in their desires and intention to make this School the equal of any other, and to send forth graduates who shall be not only properly educated, and technically competent, but who shall be imbued with a proper sense of their responsibility to the profession, to the public, and to their own consciences, and to whom their vocation means a serving of suffering humanity, at the continual sacrifice of their own comfort and pecuniary interests. For them may the noble pledge which has guarded and guided our profession since the days of Hippocrates be no mere form of words, but a real expression of lofty purpose and solemn endeavor.

And in this connection I may allude to the fact that this School, like the other departments of Tufts University, freely and willingly offers its advantages to women as well as to men, believing that it is right and fitting that those women who feel called to study and practice our noble profession should have every opportunity afforded to them to receive such an education that they may practice with credit to themselves and advantage to their patients. It is hardly necessary at this day to discuss the question whether or not women ought to enter the medical profession. This is a free country, and if the women wish to practice medicine they have a perfect right to do so; and it seems to me that every man of generous sentiments should give such assistance as lies in his power to women who are striving, often under great difficulties, to acquire a proper education for the vocation which they have felt called to undertake. As a matter of fact, I can testify that, as far as my experience goes, the women who are studying medicine are on the average fully equal in intellectual ability to the average of the men in the same classes, while in studiousness and earnestness of purpose, in high aspirations and steadfast endeavor, they are somewhat superior. This may be probably due to the fact that medicine at present offers the most attractive career and greatest reward to women who undertake to achieve an education, and to support themselves by its results, while with men many other fields of effort are open, which draw off a large proportion of the brightest and the most enterprising of the young men and decidedly impair the average of the intellect and energy of those who study medicine. Contrary to many fears that have been expressed, it has been found that coeducation of men and women in medical studies is neither impracticable nor inconvenient. In this building proper arrangements have been made for separate waiting

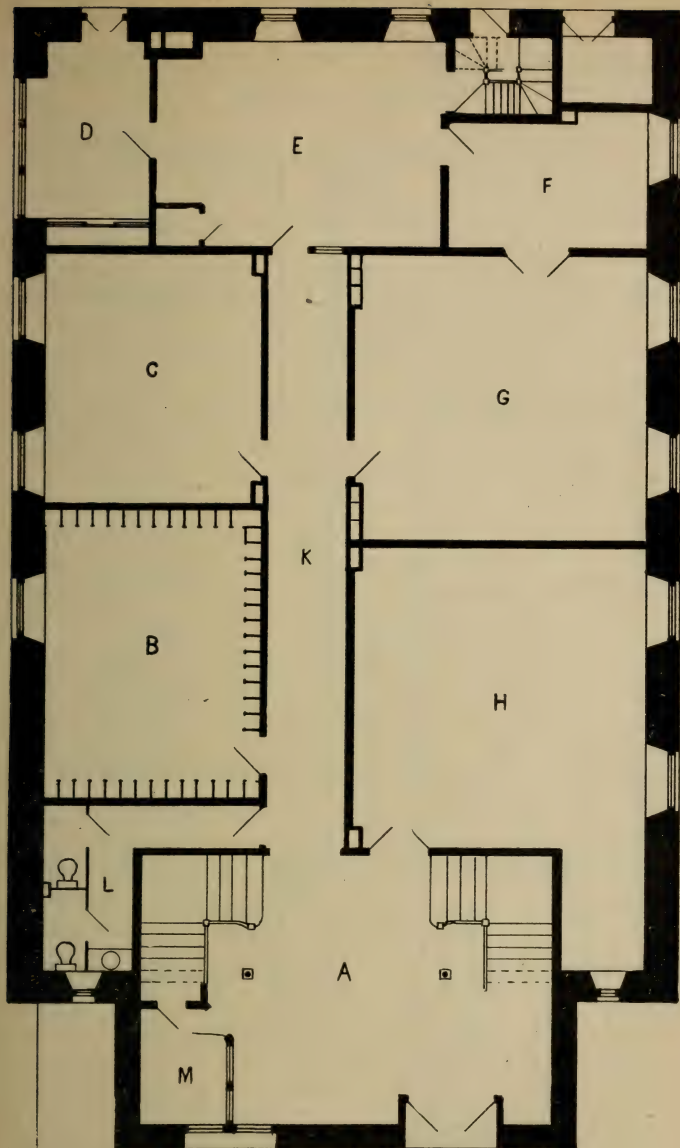
and study rooms for the different sexes, and it has been found that the presence of women in the classes of medical students elevates rather than lowers the attitude of mind of the students toward the studies which they are pursuing, and the profession they are about to enter.

Though I have described the advantages of this building and the happy condition in which we find ourselves, I do not wish to be understood to imply that we have as yet all that we ought to have. It is a curious fact that for some reason schools of medicine are supposed to be able to sustain themselves without endowments, while schools of letters, theology, and science have abundant provision made for their support by foundations and legacies. I have already pointed out in how many ways a school of medicine is, or should be, of concern to the community, and there is no doubt that if the instruction in the scientific branches is to be what it ought to be, a larger amount of money must be spent than can be derived from the fees paid by the students. The teachers of anatomy, physiology, pathology, chemistry, and the other branches of pure science, should have permanent salaries, of such amount that they do not need to practice medicine to live, and they need money for original research and for effective teaching.

For the clinical part of the study of practical medicine and surgery there should be a hospital under the control of the Faculty, not necessarily a large hospital, but one where selected cases can be scientifically studied as well as carefully and considerably treated. We have succeeded in obtaining a good School; now a laudable ambition urges us to have a great School.

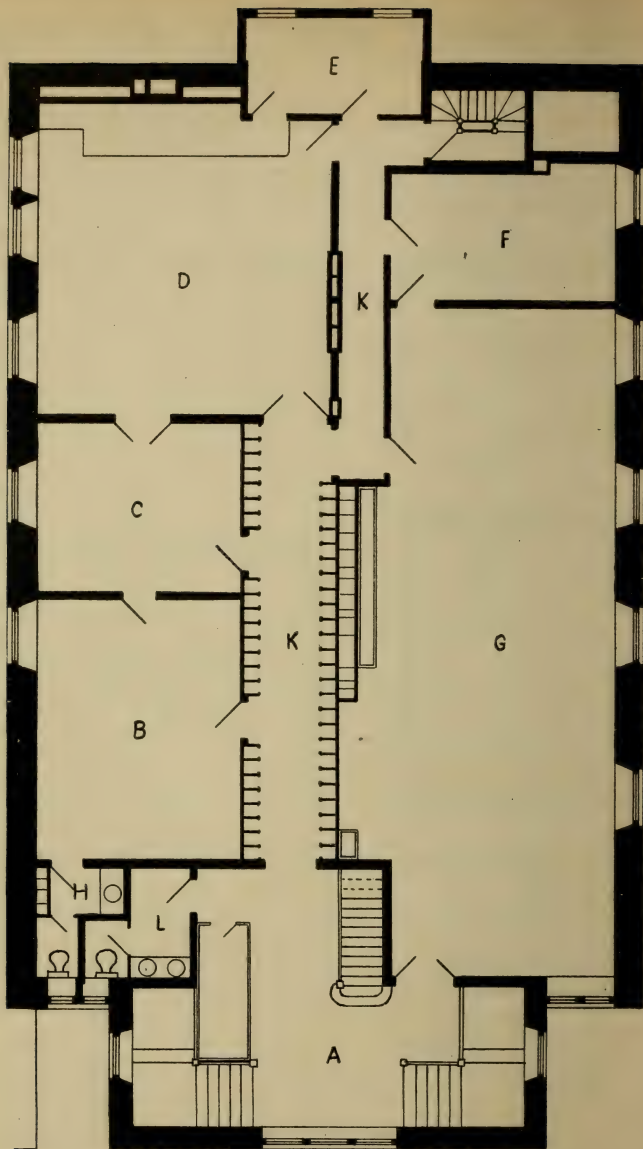
It is a matter of congratulation that at last we have in Massachusetts a State Board of Registration and Examination for the regulation of the practice of medicine, and it is a matter of personal satisfaction to me that at last I can see it founded substantially on the lines for which I labored eighteen years ago, as a member of the committee of Public Health of the Social Science Association. Before this board all aspirants for a license to practice medicine in Massachusetts must appear and pass a rigorous examination; and with the thorough instruction which Tufts can now give, during the course of four years, which the School now exacts, I have no fear but that our students will reflect credit on themselves and on their Alma Mater; at any rate we are willing to be judged by our fruits, and by our fruits we shall be known, for "men do not gather grapes from thorns nor figs from thistles."

The following diagrams give a view of the arrangements of the floor spaces of the Medical Building.



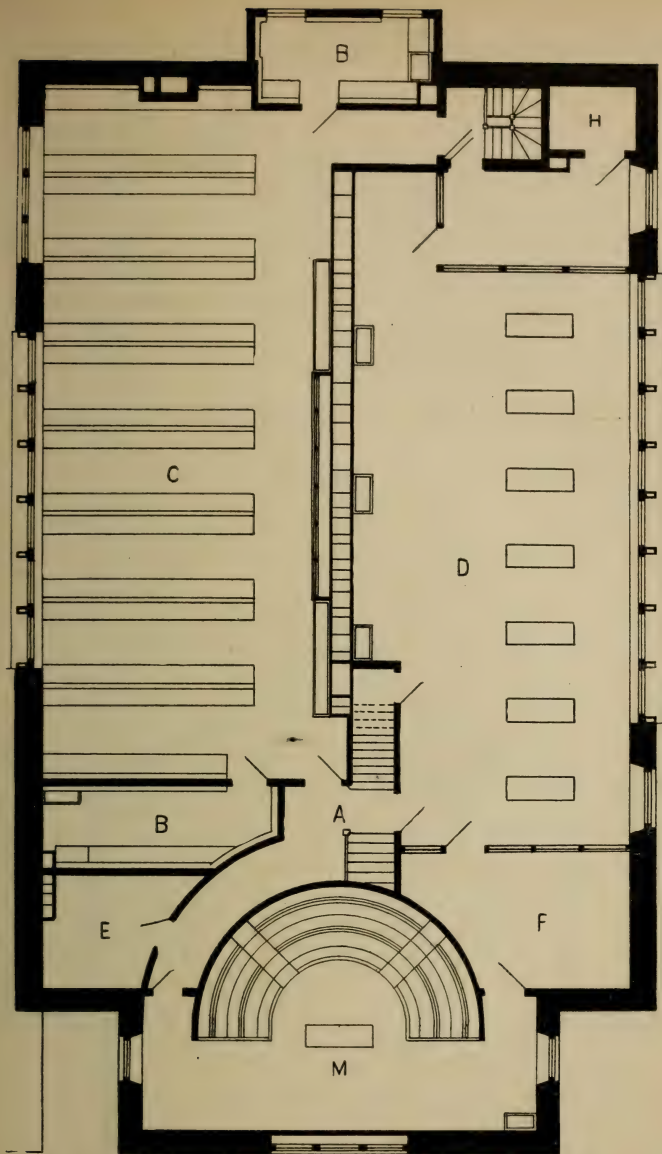
FIRST FLOOR.

- | | |
|------------------------|------------------------|
| A. Entrance Hall. | G. Recitation Room. |
| B. Men's Waiting Room. | H. Library and Museum. |
| C. Men's Study Room. | K. Corridor. |
| D. Surgeon. | L. Men's Toilet. |
| E. Dispensary. | M. Bursar's Room. |
| F. Physician. | |



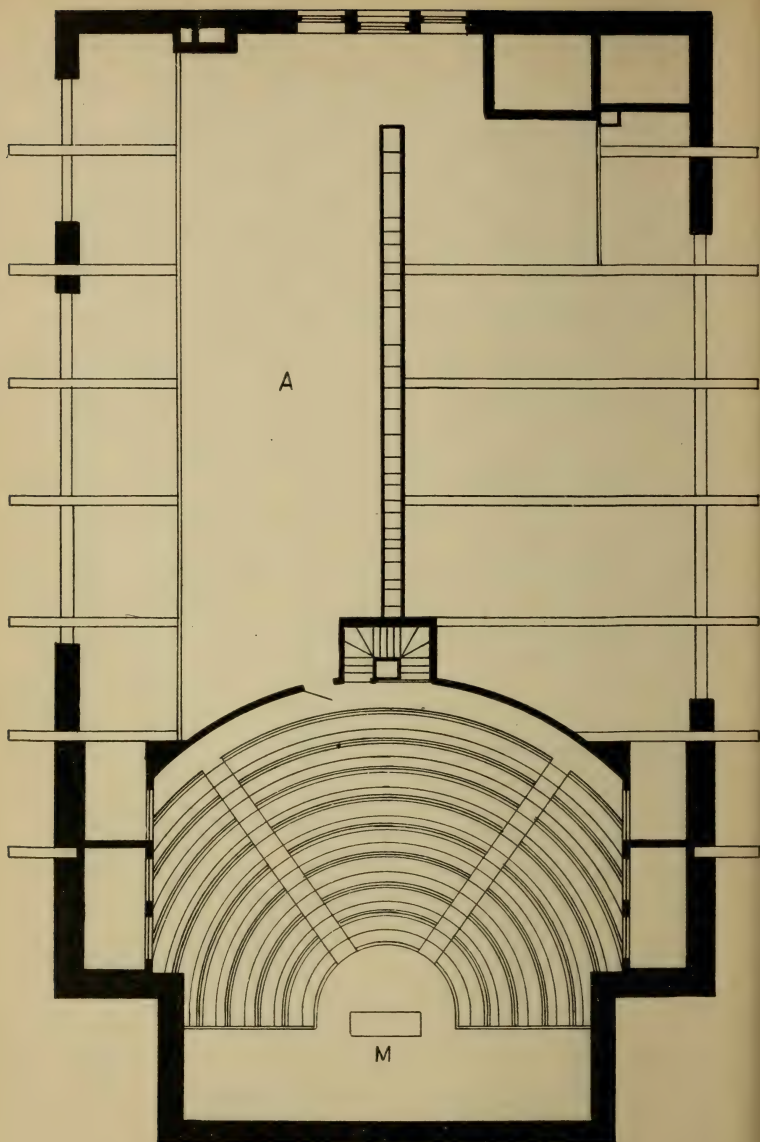
SECOND FLOOR.

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|--------------------------|-------------------------------------|
| A. Staircase Hall. | F. Bacteriology Room. |
| B. Women's Waiting Room. | G. Physiol., Pathol. & Histol. Lab. |
| C. Women's Study Room. | H. Women's Toilet. |
| D. Lecture Hall. | K. Corridors. |
| E. Waiting Room. | L. Men's Toilet. |



THIRD FLOOR.

- | | |
|-----------------------------------|-----------------------------|
| A. Staircase Hall. | E. Faculty Waiting Room. |
| B. Private Laboratories. | F. Private Dissecting Room. |
| C. General and Medical Chem. Lab. | H. Elevator. |
| D. Public Dissecting Room. | M. Amphitheater. |



FOURTH FLOOR.

A. Store Room.

M. Amphitheater.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President :—

Of the thirty-six students on the School's roll for the year, seventeen were from Massachusetts, five from Maine, three from New Hampshire, two from Vermont, one from Connecticut, one each from Rhode Island, and California, three from Ohio, one from Illinois, one from Minnesota and one from Quebec.

The class which was graduated in June originally numbered sixteen. Thirteen of them remained to take the full course of theological study which the School prescribes, and twelve received the degree of Bachelor of Divinity.

Of the ten students who entered the Divinity School in September, eight were able to register for the full course of study as candidates for the Divinity degree.

No changes during the year were made in the work of the School except those which were called for by circumstances and the immediate needs of students.

New interest in biblical subjects seemed to be created by some general exercises in the form of readings from the Bible, and lectures upon the text. The School was fortunate, also, in the valuable and interesting studies which the non-resident lecturers, Rev. H. I. Cushman, D. D., Rev. F. W. Hamilton, and Rev. C. R. Tenney, brought the students. Mr. Hamilton's lectures commended some modern methods of charitable work, and were of great practical value, and those of Dr. Cushman and Mr. Tenney commended more directly the Christian ministry and the character of the Christian minister.

We owe much to the Universalist Publishing House for a

generous gift of its publications to the Historical Society; to the Y. P. C. U. of Massachusetts for the gift of one hundred dollars for the benefit of the Divinity Reference Library; and for special offerings of money and books from friends of theological education. All of these books, except those of the Historical Society, are duly "entered" by the College Librarian, duly credited to the givers, and then "charged off" to the Divinity School. The Y. P. C. U. books suggest the beginning of a fine collection of volumes, a library in itself, the noble offering of our devoted young people; and the gift of the Publishing House is a splendid addition to the theological library of the Historical Society.

As respects the character of the work done in the Divinity School this report may not speak, except to say that the School aims to give to the world well-equipped ministers, and that in working towards this result it does its best to arm its students to deal wisely with an age of doubt, and so to charge them with religious motive that they will work for the church and for spiritual results in human souls. This also is to be said, that the distinctly religious problem before the minds of the faculty and students of this School does not differ from the one which every theological seminary is called to study. After all the eager work of the class-room, and after all that teachers try to do for the best life of individual students, they often have to deplore the want of success. This, however, can be safely said: The real results of the work in a theological school do not appear at the time of the student's graduation, nor always during the first year of ministerial life, but afterwards, and along the line of faithful service through the use of the methods which are among the most real bequests of the School to those it aims to train.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 16, 1897.

THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President : —

Herewith is presented the annual report of the Medical School for the year ending September 16, 1897.

At the beginning of the school year, September, 1896, the School was transferred from the altogether insufficient quarters at 188 Boylston Street, to the building formerly occupied by the Chauncy Hall School upon the same street, near the Boston Public Library.

The accommodations here were amply sufficient for the great increase in numbers, but very poorly suited for the laboratory and dissecting-room requirements of a modern medical school. However, it was such an improvement over the former quarters that every one, both teachers and students, felt stimulated and encouraged to do their best work.

The teaching force had been increased by the appointment of two full professors, Doctors Jack and Washburn; and six instructors, Doctors Stowell, Hough, Twombly, Gay, Steadman, and Garceau. This was the first year of a four years' course, and, contrary to what might have been expected, instead of a falling off in numbers, there was a marked increase. Fortunately, the School was able to offer much more clinical privileges to the students at the various dispensaries and hospitals, and these privileges they gladly availed themselves of.

Early in the year the Trustees purchased for the Medical School the church building upon the corner of Rutland Street and Shawmut Avenue, and at once prepared plans for its complete renovation. Careful studies were made of medical school buildings in other cities, and ample provision made for attrac-

tive, convenient, and spacious dissecting rooms. There are also laboratories with sufficient lecture rooms, and comfortable waiting rooms for both sexes, besides a large amphitheater, which has a seating capacity of nearly two hundred and fifty. Fortunately, upon the first floor there was sufficient room for a dispensary, besides a lecture room for clinical teaching. These facilities for clinical instruction will be of the greatest advantage in enlarging and perfecting the methods of instruction so necessary for a successful medical school.

The location of this building is in close proximity to the hospital centre of the city, which will in the near future afford the School more than an ample supply of clinical instruction in all departments.

I take great pride and pleasure in noting the rapid and substantial growth of the School, and also that the ability and number of those who give instruction has kept pace with it.

The enthusiasm that has pervaded all departments has been fully reciprocated by the Trustees, and these together must make the future of the School assured beyond any question or doubt.

Respectfully submitted,

JOHN L. HILDRETH,

Dean.

TUFTS COLLEGE MEDICAL SCHOOL,

September 16, 1897.

THE BROMFIELD-PEARSON SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

To the President : —

The number of students receiving instruction in the shops of the School during the year was seventy-one. Of this number, fifty-eight pursued the prescribed courses in pattern making, forging, and machine work, and eleven seniors were employed on their theses. The course in forging was elected by two candidates for A. B.

Six students entered the special preparatory department of the School. This number might be increased to twenty without interfering with the regular college work. It should be noted, however, that the drawing classes and shop work of the engineers absorb nearly all of the time of instructors, occupy most of the building, and use all of the shop equipment. The policy observed is to transfer students to the College immediately on their fulfilling the requirements for entering, rather than to encourage them to pursue the special advanced course of the School.

This annual change in membership necessitates special advertising, as the College circular does not reach the class for whom these special courses are designed. During the past year the School was not advertised.

No addition has been made to the equipment, although very much is needed. In the machine shop it is necessary to so plan the work as to keep the machinery in operation during the greater part of the day, thus necessitating the running of the engine much more than would otherwise be necessary,

and requiring the attendance of an instructor nearly all the time.

A one-hundred-and-fifty light dynamo was designed and built by the senior engineers, and will be put in operation during the coming year. This will make possible the lighting of our drawing rooms, which is greatly needed, as much of the work is continued into the late afternoon.

Respectfully submitted,

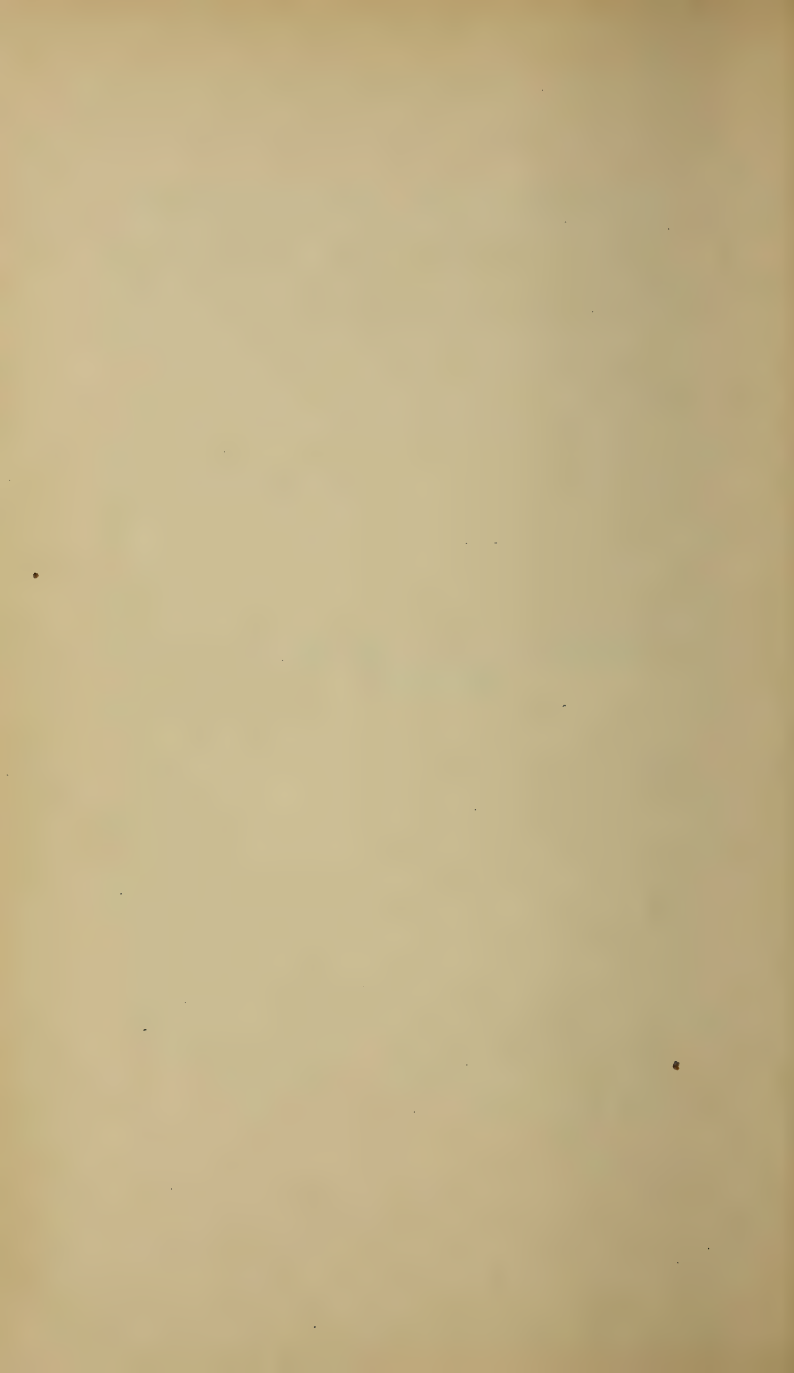
GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE,

September 16, 1897.

THE BARNUM MUSEUM OF NATURAL
HISTORY.



REPORT OF THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President:—

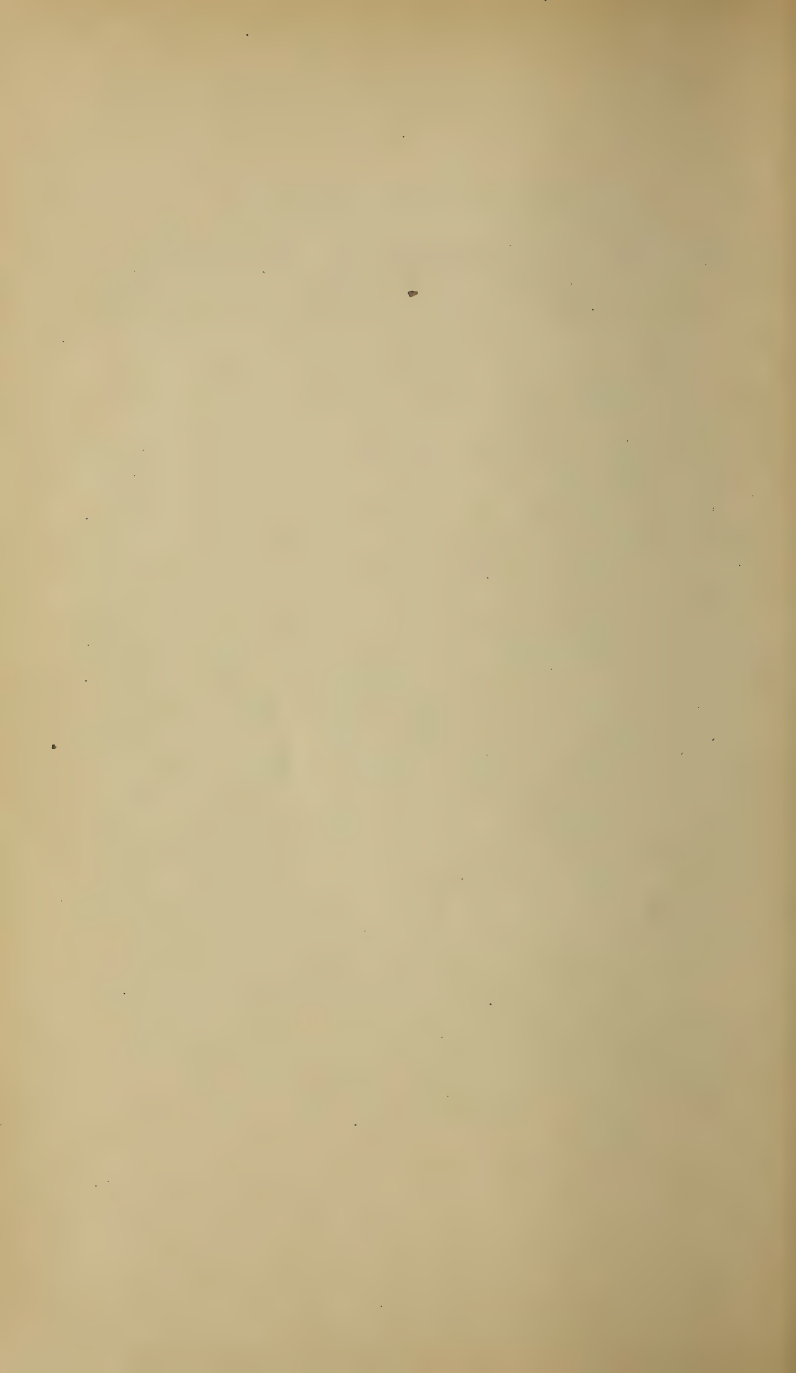
The additions to the Barnum Museum of Natural History during the past year have been few. Through the kindness of Dr. Harold Williams we received several bones of a whale-bone whale, and also a specimen of the large sunfish (*Mola mola*) of the Atlantic. The latter has been sent to Ward's establishment at Rochester for mounting, and will be made up both as a mounted skin and as a skeleton. Through the kindness of Pres. D. S. Jordan, of Leland Stanford University, we have been able to buy a "bachelor" and a "pup" of the Pribilof fur seal, and these are also in the hands of Ward for mounting. From the United States Geological Survey we have received one of the Educational Series of Rocks, embracing about one hundred and fifty specimens of American rocks.

By collection and purchase we have obtained a few specimens: A specimen of the Pteropod, *Clio*, Pterophryne, from the Atlantic, and a number of lizards from Jamaica.

No alterations have been made in the collections.

JOHN P. MARSHALL,
Director.

TUFTS COLLEGE,
September 16, 1897.



THE GODDARD GYMNASIUM.

REPORT OF THE GODDARD GYMNASIUM.

To the President: —

The past year the work in the Gymnasium was conducted upon essentially the same lines as in former years. From the first of December to the first of April the sophomore and freshman classes met the instructors in physical training regularly each week.

The men — one hundred and twenty in number — were divided into two large classes, and each class, under the direction of Mr. Stroud, exercised in the Gymnasium three hours a week, the work consisting of free movements with wands and dumb-bells, followed by graded exercises with chest weights, and upon the bars and horse; and also the use of the medicine ball and basket ball, and practice in jumping.

Thirty-four women took the prescribed Gymnasium work, and practised the Swedish or Ling system of gymnastics. The Gymnasium work of the women was directed by Miss Moakler.

Particular attention was given those students whose physical condition did not allow them to join in the class work, and special exercises were given them — work which was especially adapted to their individual needs.

The need of better facilities for carrying on the work in physical training was felt more the past year than ever before. Both in its capacity and equipment the Gymnasium failed to meet the requirements of the physical welfare of the students of the College, and especially so because it was necessary to make the Gymnasium do double duty, in that it was used by both the men and women students. For the men alone the

Gymnasium does not offer adequate accommodations ; but when these must serve the women students as well, a condition obtains which does not allow satisfactory privileges to either sex. Considerable difficulty was experienced in arranging the periods for the work so that the hours for exercise of the men and the women should in no way conflict ; and to meet this difficulty it became necessary to make some of the work come at times which, from a physiological point of view, were not best for physical exercise. And, owing to the fact that several hours of the day the Gymnasium was closed to the men, and likewise to the women, the students who had completed the required work had little or no opportunity of taking additional exercise.

With the present facilities the difficulties in the way of securing the best results from the work in this department of the College are very great. There is urgent need of some new apparatus, a running track, more lockers, and additional and improved bathing facilities. Briefly, one of the pressing needs of the College is a new Gymnasium.

Respectfully submitted,

WILLIAM R. WOODBURY,

Medical Director.

TUFTS COLLEGE,

September 16, 1897.

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ANNUAL REPORT

OF THE

PRESIDENT

OF

TUFTS COLLEGE



1897-1898

ANNUAL REPORT
OF THE
PRESIDENT
OF
TUFTS COLLEGE



1897-1898

BOSTON
THE EVERETT PRESS
47 FRANKLIN STREET
1899

PRESIDENT'S REPORT.

1897-98.

To the Honorable and Reverend the Trustees of Tufts College : —

GENTLEMEN : The President of the College has the honor to submit the following report for the academic year 1897-98 ; namely, from September 16, 1897, to September 21, 1898.

The composition of the Board of Trustees has remained unchanged throughout the year.

Early in the current month John P. Marshall, the senior member of our teaching force, requested to be relieved of further active service in the College. His request has been granted. In recognition of his long and faithful devotion to the work of his profession, the Trustees will make him Professor Emeritus for the remainder of his life. Professor Marshall came to the College and began teaching with Dr. Ballou in the autumn of 1854. In the beginning his work embraced a variety of subjects in both the linguistic and scientific departments. He taught Latin, French, Mathematics, Chemistry, and other branches of natural science. But as the College grew in numbers and resources, the field of his work became gradually more and more restricted, until he was permitted to give his attention exclusively to subjects in Natural History. From the earliest moment of his connection with the College he has been actively engaged in gathering, arranging, and organizing our valuable and important collection of mineralogical and zoölogical specimens. Nearly every article has passed through his hands, and been identified and catalogued by him. Since the erection of the Barnum Museum he has been unremitting in his care and oversight of its contents.

As a teacher he has left his impress upon many pupils who have received their highest intellectual impulse from him; and his loyalty and devotion to the College of his love has never wavered. Every member of the Board of Trustees can but wish him a serene and happy old age.

Appointments in the teaching force of the College have been made as follows:—

FREDERIC M. BRIGGS, A.B., M.D., *Professor of Clinical Surgery.*

TIMOTHY LEARY, M.D., *Assistant Professor of Pathology and Instructor in Bacteriology.*

GARDNER W. ALLEN, A.B., M.D., *Instructor in Genito-Urinary Surgery.*

HORACE D. ARNOLD, A.B., M.D., *Instructor in Clinical Medicine.*

CHARLES H. HARE, A.M., M.D., *Instructor in Gynæcology.*

GEORGE F. HARDING, M.D., *Instructor in Dermatology.*

CHARLES F. PAINTER, A.B., M.D., *Instructor in Orthopædic Surgery.*

GEORGE F. BAMPTON, A.B., *Assistant in General Chemistry.*

WALLACE H. GRAVES, *Assistant in Qualitative Analysis and General Chemistry.*

ERNEST T. FLUEGEL, PH.D., *Assistant in Modern Languages.*

EUGENE THAYER, A.B., M.D., *Assistant Demonstrator of Anatomy.*

CHARLES S. MOSES, *Assistant in the Gymnasium.*

Dr. Briggs had served for several years as Assistant Professor of Clinical Surgery, and his appointment to a professorship is a well-earned promotion.

Re-appointments for one year have been made as follows:—

HOWARD S. DEARING, A.M., M.D., *Instructor in Clinical Medicine.*

HERBERT W. WHITE, M.D., *Instructor in Clinical Medicine.*

THEODORE HOUGH, A.B., PH.D., *Instructor in Physiology.*

HERBERT E. CUSHMAN, A.M., PH.D., *Instructor in Philosophy.*

EDWARD L. TWOMBLY, A.B., M.D., *Instructor in Clinical Medicine.*

E. CHANNING STOWELL, A.B., M.D., *Instructor in Children's Diseases.*

GEORGE A. WEBSTER, M.D., *Instructor in Otology.*

- FRANK E. SANBORN, S.B., *Instructor in Mechanical Engineering.*
 WARREN F. GAY, A.B., M.D., *Instructor in Surgery.*
 ALBERT E. ROGERS, M.D., *Instructor in Materia Medica and Therapeutics.*
 EDGAR GARCEAU, M.D., *Instructor in Gynæcology.*
 JOSEPH STEDMAN, M.D., *Instructor in Rectal Diseases.*
 EDWARD E. THORPE, M.D., *Instructor in Medical Chemistry.*
 ROBERT N. HARTMAN, A.B., PH.D., *Instructor in Qualitative Analysis.*
 HARRY G. CHASE, B.E.E., *Instructor in Electrical Engineering.*
 FRANK G. WREN, A.M., *Walker Special Instructor in Mathematics.*
 CHARLES C. STROUD, A.B., *Instructor in Physical Training.*
 VIRGIL L. LEIGHTON, A.M., PH.D., *Instructor in Organic Chemistry.*
 CHARLES H. CHASE, S.B., *Instructor in Shopwork.*
 CHARLES G. JORDAN, A.B., *Assistant in Mathematics.*
 SAMUEL C. EARLE, A.M., *Instructor in French and Assistant in English.*
 WILLIAM R. WHITEHORNE, A.M., *Assistant in Assaying.*
 LIZZIE MAUD CARVILL, *Instructor in Physical Training for Women.*
 WILLIAM R. WOODBURY, A.B., M.D., *Lecturer on Hygiene and Instructor in Nervous Diseases.*
 WALTER J. OTIS, M.D., *Lecturer on Rectal Diseases.*
 WILLIAM S. BOARDMAN, A.B., M.D., *Lecturer on Laryngology.*
 GEORGE A. BATES, D.D.S., *Lecturer on Histology.*
 CHARLES D. KNOWLTON, M.D., *Demonstrator of Anatomy.*
 THOMAS F. GREENE, M.D., *Assistant Demonstrator of Anatomy.*
 JOHN I. FRENCH, M.D., *Assistant in Materia Medica and Therapeutics.*
 JAMES C. D. CLARK, M.D., *Assistant in the Theory and Practice of Medicine.*
 ETHEL MONROE HAYES, A.B., *Assistant Librarian.*
 FRED D. LAMBERT, PH.D., *Instructor in Biology and Olmstead Fellow of Natural History.*
 WILLIAM ALBERT WILLARD, B.S., *Miner Fellow in Natural History.*

The following were appointed Proctors:—

- HERBERT E. CUSHMAN, PH.D.,
 FRANK G. WREN, A.M.,
 VIRGIL L. LEIGHTON, PH.D.,
 FRED D. LAMBERT, PH.D.

The whole number of students admitted to the College in all departments is two hundred and seventeen. They are distributed as follows :—

College of Letters	95
Divinity School	6
Medical School	110
Bromfield-Pearson School	6
	217

The whole number of students enrolled in the College is five hundred and thirty. They are distributed as follows :—

College of Letters :—

Graduate	6
Senior	45
Junior	53
Sophomore	68
Freshman	78
Special	30
	280

Divinity School :—

Senior	10
Middle	5
Junior	4
Sub-Junior	2
Special	4

25

Medical School :—

Senior	77
Junior	7
Sophomore	51
Freshman	72
Special	6
Graduates	6

219

Bromfield-Pearson School	6

Total number of students 530

The whole number of women students, in all departments,

is one hundred and thirty-eight. They are distributed as follows :—

College of Letters.	84
Divinity School	6
Medical School	48
	138

The whole number of degrees given in course at the Annual Commencement was one hundred and twenty-five, distributed as follows :—

Bachelor of Arts	29
Bachelor of Science :—	
In Civil Engineering	6
In Electrical Engineering	8
In Chemistry	2
	45
Bachelor of Divinity	9
Doctor of Medicine	58
Master of Arts	9
Master of Science	1
Civil Engineering	2
Doctor of Philosophy	1
	80
Total number of degrees in course	
	125

It will be seen that the number of degrees given is considerably greater than the whole number of students in the College when I assumed the presidency in 1875, and for many years thereafter. It is evident that the College has entered upon a period of steady and permanent growth. It has fought its battles and it may rely henceforth for patronage, not upon any ground of sentiment, but upon actual achievement in educational work and the facilities it offers for the acquisition of the higher learning. Students are coming to us now because they know that this is a good college, because of the variety, breadth, and liberality of our courses, and because of the advantages of our situation. The outlook for the coming year is that nearly every

room in our dormitories will be taken except the rooms in Commons Hall, and it is probable that by another year arrangements can be made which will render necessary the occupancy of that building also. A very large percentage of our students, however, are day students, coming and going on the trains morning and evening. Indeed, this is one of the most gratifying features of our growth in numbers,— that it comes in large measure from the neighboring towns and from secondary schools where our work can be seen and estimated at its full value.

Some changes have been made in the administration of the College that deserve mention. The Engineering Department has grown up wholly under the control of the Faculty of Letters. Additions have been made to the teaching force from time to time as the exigencies of the department seemed to require; and the programmes have been shaped not always by the conclusions which the highest expert knowledge would seem to require. It was felt that the time had come for the appointment of an administrative board for this department. Six members of the faculty, most closely associated with the work, with the President of the College, have been designated to have general charge of the curriculum and complete control of the minor details of administration. Considerable benefit has been experienced already. Important reforms have been instituted in the economy and better correlation of the teaching force. The programmes have been subjected to the most rigid scrutiny, with the view of making them more effective for the purposes of technical education. Professor Gardner C. Anthony, the Professor of Drawing and also the Dean, since its organization, of the Bromfield-Pearson School, has been made Dean of this department. I think we may look for improved conditions in the engineering work, and for better results, on the whole, than have yet been secured. This also raises the question whether the principles of organization for administrative purposes may not be carried further with profit.

The Summer School of Chemistry has made a decided gain

in numbers over last year. It can be assumed fairly that there is a real field for this work. As the facilities of our laboratories and the quality of our teaching force come to be better known and appreciated, not only will many teachers, to whom the summer is the only time available for systematic study, desire to make use of the privileges here offered, but college students who have entrance conditions to make up will gladly seize this opportunity for summer work. The Department of Biology has also tried this year the experiment of a summer school, with very gratifying results. South Harpswell, Maine, was selected as a favorable point. It is easy of access. It has facilities for board at reasonable rates. The waters there furnish a good variety of marine forms for interesting and profitable investigation. Although the undertaking was only determined upon a few days before the end of the college year, so that no advertising was attempted, the number of students was all that the professor in charge cared to assume the responsibility for at the outset. With the improvement in facilities which can be made for next year it is felt that the number of students in attendance can be materially increased. Indeed, there is no doubt of our ability to build up at this point a strong and successful summer school.

Moreover, the success that has attended these efforts raises the question whether the practice may not be extended to other departments of instruction. There is no reason why many more subjects that are pursued in college might not be taken up during the summer, either here or at some place where a number of teachers may chance to congregate. Several of our language teachers, both ancient and modern, are in the habit of spending their summers at Linikin's Bay, on the coast of Maine. During the season just closed classes have been formed there for private study of some of the modern languages. It has already occurred to the teachers that it might be wise to organize for language work under the auspices of Tufts College. Such movements are all in the direction of the higher learning, and should, in my judgment, receive

the encouragement of the Trustees. It would seem that when the work done is of the grade of college work, and is accomplished under the tuition of regularly appointed college instructors, it might, without prejudice to any interest, be counted towards a degree. That would dignify the effort and put a seal of approbation upon the work, which would commend it to serious students whether of the collegiate or non-collegiate type.

The need of new buildings for the purposes which I enumerated in my last report remains substantially unchanged. The Engineering Department cannot work to the full scope of its power until we have at least one additional building devoted exclusively to laboratories in engineering. If we had sufficient space for the convenient handling of our apparatus we could, without additional cost, give instruction to a very much greater number of students than at present. No doubt, too, the increase in the facilities would attract the students. The time has arrived, also, when larger and better rooms are urgently required for recitation and lecture purposes. A commodious lecture-hall with adequate modern equipment would be a boon. Recent experience has brought to light other important needs. Making, as we do, physical training compulsory upon men and women alike, it is almost indispensable that we should have a separate gymnasium for women. The number of students in the College is greater than can be well accommodated in our building at present, without regard to the necessity we are under of finding separate hours for men and women. The rooms for lockers and bathing are quite inadequate. The need is, therefore, very important — almost imperative. Such a building should be constructed so as to give not only room for exercise, and dressing and bathing, but rooms for reception and study; so as to afford a common meeting-place for women, and to relieve rooms in other buildings that are now overcrowded. At a very moderate cost provision could be made that would meet these requirements for a good

many years to come. Our experience on Commencement Days, also, has shown that we have outgrown Goddard Chapel as a place for the public exercises of Commencement, and that the Gymnasium can no longer accommodate at the dinner-table all who seek to avail themselves of the proffered hospitality of the College on that occasion. We need, therefore, a building for Commencement exercises, and for Commencement dinner. Such a building ought, also, to contain a lecture-room of moderate size for public uses, and a faculty-room. A building of this sort would not necessarily cost a large sum of money.

Dean Leonard gives a hopeful and encouraging report of the Divinity School. It should be said in frankness, however, that the attendance has fallen off considerably within the last few years. The decline may be due to at least two causes. First, there may be temporarily a suspension of interest in the ministerial profession. I should hope that this is not a symptom of a general and permanent condition. Secondly, the exaction of tuition-fees of divinity, as of other students, may have deterred some. It is a comfort, at all events, to know that there has been no decline, but rather an improvement, in the mental quality of the members of the school. The education of candidates for entrance has shown marked improvement: The percentage of those who have the degree of Bachelor of Arts, or, at least, a fairly broad general training, has perceptibly risen. So that, though our numbers may be small, we may rest in the conviction that those who, from our school, are to take up the work of the ministry will have had hereafter a reasonably broad and thorough scholastic preparation.

The Medical School has had a year of increased prosperity. The attendance has fully met the expectations of the teaching staff. The new building has been a source of satisfaction to both pupils and teachers. The departments of Medical Chemistry, Physiology, Histology, and Bacteriology are now in the hands of highly trained specialists, giving in the majority of

cases their entire time to their respective subjects. With laboratories of the most approved modern equipment, there is no reason why the work that is done here should not be equal to the best that is done in any school. It is now possible to insist upon a higher preparation for entrance, and to secure, as we are already doing, a genuine improvement in the quality of candidates for the degree of Doctor of Medicine. The extension of the course from three years to four years has not tended, as was feared by some, to diminish the resort to the school. On the contrary, the well-known excellent equipment of the new building, the high professional standing of the men composing the faculty, and the quality of the work done are attracting attention towards the school from all parts of the country, and bringing a steady and constant increase of students.

I call attention to the statements concerning the several departments of instruction, which are given below in detail.

LATIN.

By the adoption of a system of rotation of courses the number of subjects offered in Latin has been considerably augmented. The Juniors and Seniors now meet together, and courses 3 and 4 are offered to them regularly, on alternate years. In addition there are provided a number of half-year subjects, — 8 to 13 of the catalogue, with two others planned but not yet announced. Two of these are given each year. They are open to all who have completed Freshman Latin, and are offered only once in three, in some cases, once in four or more, years. Some of these are lecture courses, others are devoted to the reading of authors and works not provided for in the regular series of subjects, 1 to 4. There are, besides, three composition courses for Freshmen, Sophomores, and the more advanced students, respectively. Forty-eight term hours of Latin work are therefore open to every qualified student who completes a course of four years.

The work of the year was, in brief, as follows : —

The Freshmen read Livy, Book 21 and a part of 22 ; Cicero,

De Senectute, and a large number of the Odes and Epodes of Horace.

The Sophomores began with Horace's Odes, owing to the fact that their reading of this important author had been seriously interrupted in the previous spring. Then followed the Phormio and Adelphoe of Terence, the Germania of Tacitus, and a selection from Pliny's letters.

In Latin 4 (Juniors and Seniors) the time was devoted to the Phormio of Terence, the Trinummus of Plautus, Book first of Cicero's De Oratore, and finally, selections of odd and striking bits of Latin prose and verse from all periods, illustrating Roman life and literature.

In Latin 8, a half subject, with representatives from the three upper classes, the Lyrics of Catullus and the Elegiac measures of Tibullus and Propertius were the objects of careful study.

Latin 9 was a lecture course, the subject being Roman Private Life. Photographs and other illustrative material were used to vivify the subject.

Four students elected Sophomore Latin Composition; eleven, Freshman Composition. Two Seniors found it for their advantage to take the Sophomore course.

GREEK.

Courses 5 and 6 were in charge of Professor Schneider. In course 5 there were six students who attended three hours a week throughout the year. The text-books used were Idyls of Theocritus, Clouds of Aristophanes, Plato's Symposium. For reading at sight one hour each week, text-books: selections from Thucydides, Æschylus, Seven against Thebes.

In course 6 there were three students who received instruction three hours a week throughout the year. Text-books: Pindar's Odes, Plato's Republic, Aristotle's Ethics. For reading at sight, one hour a week, Æschylus, Seven against Thebes, and Thucydides, Book V.

The remainder of the work in Greek was in charge of Assistant Professor Wade. While in general outline the work of the under-classmen did not differ from that of former years, the instructor was enabled to render the courses given by him far richer and, he hopes, more profitable to the students by reason of a substantial increase in the number of books in the library available for the Greek and Latin Departments. These books came from the Joy Fund. We are still in need of many of the most necessary books.

The class beginning Greek accomplished satisfactorily somewhat more than the college entrance requirements.

Greek 2, the Freshmen, read Plato's *Apology*, Homer, *Phæneian Episode of the Odyssey*, Euripides, *Iphigenia among the Taurians*, and Herodotus, Book 3. Lectures were given, and the relation of the books read in the class-room to the literature and life of Greece, and to modern literature, was emphasized. In connection with Greek 2, an elective class in composition and sight reading was conducted throughout the year.

The work with the Sophomores, Greek 3, was especially satisfactory. The class was one of unusual attainments in language study, and of unusual enthusiasm for linguistic and literary work. The instructor lectured with considerable frequency, in particular on the orators, and on the drama and the dramatists. A considerable amount of collateral reading and investigation was done by the class. The books read were Lysias, eight orations (Morgan), Antiphon, four orations (Teubner text), and one play each of *Æschylus*, *Sophocles*, and *Euripides*. In connection with Greek 3 an elective class, composed of the whole of Greek 3, with some additional students, used Sedgwick's *Greek Composition*, and read at sight from *Andocides De Mystериis* and *Hiller's Anthologia Lyrica Græca*. The "Life and Works of Hesiod" was the subject of investigation embodied in a thesis at the end of the year.

At the beginning of the fall term Mr. Malcolm C. Anderson,

of the graduating class, applied for the degree of A.M. Owing to the inability of Dr. Schneider to arrange to conduct the work, that duty devolved upon the assistant in the department. Mr. Anderson devoted himself to the orators, and presented a thesis on "The Rivalry of Æschines and Demosthenes." The instructor read with him all the orations of Æschines, together with the Scholia, Demosthenes 18 and 19, Plutarch's De Vita Demosthenis, and directed his reading of a large amount of material in French, German, and Latin bearing upon the subject. Mr. Anderson also pursued a course in Advanced Composition throughout the year.

MATHEMATICS.

During the first term the work of the Mathematical Department was done during the absence of Professor Brown by Mr. Wren and Mr. Jordan. All of the courses offered in the catalogue were given, and both of the instructors did their work faithfully and well. On the resumption of work by the professor at mid-year he took the regulars in Solid and Spherical Geometry and in Plane Trigonometry. Also, he had a class of eight electing the Calculus. To two of the Seniors a course was given not offered in the catalogue, in Mathematical Astronomy. The other courses were continued by Mr. Wren and Mr. Jordan. The following is an exhibit of the work, by courses, of each instructor, and also the number of term hours in each course:—

First Term.

MR. WREN.

Mathematics 1 (Div. 11)	. . 3
Mathematics 3	. . . 3
Mathematics 7	. . . 3
Mathematics 9	. . . 3
Sophomore Engineers	. . 3
Junior Engineers	. . . 3
Senior Engineers	. . . 2

MR. JORDAN.

Mathematics 1 (Div. 1)	. . . 3
Mathematics 4	. . . 3
Freshman Engineers	. . . 6
Bromfield-Pearson School	. 6

Second Term.

MR. WREN.

Mathematics 5	3
Mathematics 8	3
Junior Engineers	2
Senior Engineers	2
Graduate Work	3

MR. JORDAN.

Sophomore Engineers . . .	3
Freshman Engineers . . .	2
Mathematics 1 (Div. 1) . .	3
Mathematics 2	3
Bromfield-Pearson School .	6

PROFESSOR BROWN.

Mathematics 1 (Div. 2)	3
Mathematics 6	3
Graduate Work	3

An effort was made by Professor Brown during the year to obtain donations from the alumni of the College with which to purchase books on mathematics for the College Library. Nearly every one to whom application was made gave cheerfully. Though the sum obtained was not large, it has been possible to add quite a number of valuable books — some of which had not been found in the book-market in a search of several years — to the small collection in the mathematical alcove. It is proposed to continue this work, as opportunity offers, until the College Library is as well furnished in this department as are the libraries of other New England colleges.

CIVIL AND MECHANICAL ENGINEERING.

Courses have been given in Mechanics of Engineering, Hydraulics, Road Engineering, Masonry Construction, Structural Design, and Naval Architecture. Mechanics of Engineering was taken by all Junior engineers in their second term, and Seniors in their first term. This very important, and to some students difficult, subject calls for careful preparation for the work of the recitation-room. Text-books are used in this, as well as other courses, but much remains for the instructor to do as an interpreter and guide, and to encourage individual effort.

Hydraulics is studied by Seniors during the first term, and

embraces both theory and application. Principles are held to be of the first importance, and numerous practical problems are assigned, care being taken to distinguish between the mastery of principles and ability to substitute numerical values in a formula.

Under Road Engineering are included Railroads and Highways. The course is carried on through the Senior year, being required of Civils and elective for Electricals. The year began with the study of curves, after which was taken up the study of principles of economy in railroad location, construction, maintenance, and operation. Highway Construction follows, with a study of the nature of the different materials used in road-making, cost, application, and endurance.

Structural Design is taken by Senior Civils, the work carried on in the drawing-room, where plans and specifications are prepared and a study made of numerous examples. Masonry Construction is taken by all Senior Civils in their second term, and was elected by some of the Electricals.

The course in Naval Architecture was given for the first time at the request of five students. These young men made good progress, being very much interested in the subject. Thearle's Theoretical Naval Architecture was used.

Sophomore Surveying, with Assistant Professor Daniels, was taken by twenty-one students and by three members of the Bromfield-Pearson School. Field-work, plotting, and some calculations occupied the time during fine weather, and textbook work with more calculations was given during the rest of the first term.

Topography extended through the Junior year, and was taken by eleven students the first term, and by nine the second. It was also elected by one candidate for A.B. Field-work was done while weather permitted; then drawing and calculating were done.

The Seniors did Railroad Surveying during the first term, — laying out of line, curves, and slope-stakes, — and made the

necessary drawings for that work. This was followed by designs for trestle-work connected with the former work. Seven students did this work.

Seven Senior engineers and one student from the A.B. department had the usual course in Roofs and Bridges. This consists chiefly in studies of stresses in common types of trusses; but time was found for making one complete design for a roof truss.

The usual work in free-hand lettering was done by fourteen Freshmen and three Bromfield-Pearson students.

Drawing and Mechanical Engineering were in charge of Professor Anthony and Instructor Sanborn. The inability of most engineering students to meet the new but very simple requirement in free-hand drawing necessitates a continuation of the class in free-hand drawing. This will be required so long as the demand for more and better instruction in our High School drawing courses fails to be recognized. No radical changes have been made in the drawing courses during the past year, but the work has been so systematized as to assist materially instructor and student in accomplishing more easily a greater amount of work. It is gratifying to note that during the past three years five text-books have been written by instructors in the Department of Drawing for the use of their classes. In two other classes the notes used by the students have been elaborated to the degree that they are the equivalent of text-books.

A summary of the work done in the shops shows an increase in amount, and an advance in the general character, over that of last year. The department was fortunate in again securing the services of Mr. Moore as teacher in Forging, and the results attained by the class are excellent for so short a course.

The Senior Thesis work has been varied in kind and ambitious in amount, the following machines having been in process of construction:—

A rotary transformer, a direct connected high-speed motor and Mordy type alternator, an iron-clad motor of special de-

sign for use as a face-plate pattern-lathe, an electric welding-device, a reflecting galvanometer with magnetic shield two inches in thickness, and a synchronous motor.

The instruction given has been along such lines as are calculated to give the student a knowledge of modern shop methods in connection with the educational development due to this system of training. The department continues to be seriously handicapped by the lack of machine tools, and only by a careful planning and much extra labor on the part of the instructor have the students been able to accomplish the required work. The variety of subjects taught, together with the name of instructor and number of students, is tabulated as follows:—

SUBJECT.	INSTRUCTOR.	NO. IN CLASS.
Free-hand Drawing	Professor Anthony	19
Technical Sketching	" "	18
Lettering	Professor Daniels	17
Elementary Mechanical Drawing	{ Professor Anthony Professor Daniels	18
Descriptive Geometry	Professor Anthony	17
Elementary Machine Drawing	Mr. Sanborn	16
Elements of Mechanism	"	16
Kinematics	"	17
Advanced Machine Drawing	{ Professor Anthony Mr. C. H. Chase	13
Machine Designs	Professor Anthony	10
Advanced Machine Design and Thesis Drawing	Professor Anthony	11
Carpentry and Turning	Mr. C. H. Chase	17
Pattern Work and Moulding	" "	18
Forging	{ Mr. C. H. Chase Mr. Moore	15
Vise and Machine Tools	Mr. C. H. Chase	12
Senior Thesis Work	" "	11

Mr. Sanborn had charge of the classes in Mechanics and Steam, and the courses were the same as the previous year.

ELECTRICAL ENGINEERING.

The teaching work in the Department of Electrical Engineering is shown in the following synoptical table:—

CLASSES.	Term.	Term Hours.	INSTRUCTORS.	DESCRIPTION OF WORK.
25 Sophomores	2d	3	Mr. H. G. Chase Mr. Sanborn Prof. Hooper	Laboratory: Quantitative Experiments in Mechanics, Sound, Light, and Heat.
25 Juniors	1st	3	Mr. H. G. Chase	Recitations: Thompson's Lessons in Electricity and Magnetism.
25 Juniors	1st	2	Mr. H. G. Chase	Laboratory: Elementary Electrical Measurements.
13 Students elect- ing	2d	3	Mr. H. G. Chase	Recitations: Electricity and Magnetism.
25 Juniors	2d	2	Prof. Hooper Mr. H. G. Chase	Laboratory: Electrical Tests and Measurements.
15 Juniors	2d	2	Prof. Hooper	Calculations: Design of Dynamos; winding-tables and diagrams for continuous current and polyphase armatures; drop on network of conductors, etc.
17 Juniors	2d	3	Prof. Hooper	Recitations: Thompson's Dynamo Electric Machinery.
10 Seniors	1st	4	Prof. Hooper	Recitations: Fleming's Induction of Currents.
10 Seniors	1st	3	Prof. Hooper Prof. Anthony Mr. C. H. Chase	Laboratory: Advanced Measurements; Thesis Work, Construction of Electrical Machinery.
10 Seniors	2d	3	Prof. Hooper	Recitations: Steinmetz, Alternating Current Phenomena; Thompson, Polyphase Currents.
10 Seniors	2d	3	Prof. Hooper Prof. Anthony Mr. C. H. Chase	Laboratory: Thesis Work; Construction of Electrical Machinery.
2 Seniors	2d	6	Prof. Hooper	Honor Work: Bedell and Crehore, Mathematical Work on Alternating Currents; Ewing, Hysteresis.
1 Senior	1st 2d	18	Prof. Hooper	Postgraduate Work: Reading of Standard Electrical Works; Investigations in Laboratory; Designs and Calculations; Construction Work.

The Electrical Department has as usual furnished the Library with light during the late afternoons of November, December, and January, and the Goddard Chapel throughout the year whenever there has been a reasonable request for it.

The department has received the following donations: a ten-Kilowatt automatic electric welding-machine from Mr. F. S. Pearson, six Geissler pumps and other valuable material from the General Electric Company, six arc lamps, two feeder rheostats and switches, and four station ammeters from the Edison Electric Illuminating Company of Boston, through Superintendent Atkins.

The following apparatus has been under construction during the past year, and the work either practically completed or so far advanced as to insure its early completion: an iron-clad reflecting galvanometer, a half-horse-power synchronous single-phase motor of new design, a three-horse-power dynamic transformer, a three-horse-power direct-current motor coupled on a common base to a Mordy alternator, giving two thousand alternations per second at a speed of twenty-five hundred revolutions a minute.

The urgent needs of the department are a building adapted to the work of the department, and a fund, the income of which shall be devoted to the purchase of apparatus. We have already reached the limit of growth in our present quarters and with our present equipment.

PHYSICS.

Physics 1, a course running through the year, three times a week, embodied the largest number of students in the study the department ever had, beginning with one hundred and three, and finishing with ninety-eight. Of course we were greatly crowded. The room will hold but seventy-five without crowding, — fifteen settees, with five sittings each. Most of them had to seat seven.

There is no arrangement for ventilation except with open

doors and windows. The department has hopes, which it has cherished for many years, that better quarters will be provided, and much fuller equipment than it has ever had.

There are few colleges in New England that are not provided with a special physical laboratory. No investigations can be carried on now in its absence, which accounts for the lack of scientific work for publication, which formerly was carried on, the Engineering Department engrossing both room and apparatus.

In addition to the Physics class an Astronomy class of twenty-nine members lasted through the first term.

A lecture course on Fundamental Physics was attended by eighteen students during the first term.

During the second term Spencer's First Principles was studied by twenty-eight students, and a course of lectures on Electrical Principles and Processes (telegraph, telephone, etc.) was given to a class of twenty.

CHEMISTRY.

The advance courses in Inorganic and Organic Chemistry, in charge of Professor Michael, were attended by five students.

Dr. Hartman had charge of the work in Quantitative Analysis, and four students elected course 4, and three the more advanced work on this subject. He also had a class of three in Gas Analysis. Dr. Leighton conducted a class of seven students in Organic, and of two in Theoretical Chemistry. In the organic laboratory three students took course 14, and two course 15. Mr. Whitehorne had three students under him working at Fire Assay.

The degree of A. M. was granted to Mr. G. F. Bampton, and B. S. in Chemistry to Mr. W. H. Graves and Mr. R. L. Burbank. The dissertations handed in by these students included original investigations, the titles of which are mentioned below. In referring to the research work done in the Chemical Department during the past college year, it may not be out of place to state

that the amount of work which has appeared in print since the occupation of the new building in no wise represents the actual results accomplished. The greater part has been purposely held back to embody it in a series of monographs, which shall show the importance and application to Organic Chemistry of certain new and general laws. Research of so broad a nature necessarily proceeded very slowly, but the first communication of over one hundred pages will shortly be ready for publication. The titles of the investigations done during the past year are as follows: —

1. A. Michael: On the Preparation and Use of Zincethyliodide in Organic Synthesis.
2. A. Michael and R. N. Hartman: On the Perkins Reaction.
3. A. Michael and R. N. Hartman: On the Formation of Lactones.
4. A. Michael and V. L. Leighton: On the Addition of the Monochlorides of Bromine and Iodine to Propylene.
5. A. Michael and V. L. Leighton: On the Partial Replacement of Bromine in Propylenebromide.
6. A. Michael and V. L. Leighton: The Relative Facility of Addition to the Alkylenes.
7. G. F. Bampton: On the Action of Zincethyliodide on Cinnamylchloride.
8. W. H. Graves: On the Action of Heat on Brombutyric Ester.
9. W. H. Graves: On the Action of Potassium Nitrite on Bromacetic and Brompropionic Acids.
10. R. L. Burbank: On Some Properties of Tolylsulphone-acetic Ester.

During the year fifty-one students took General Inorganic Chemistry, which, in this course, is a larger number of students than usual. The class has been divided into three divisions for laboratory work, but remained entire for lectures. The ground covered and the text-books used have been the

same as last year. This course extended through the college year.

Twenty-five students took Chemistry 2, Qualitative Analysis, during the first half-year. With the exception of six lectures, the work has been in the laboratory. A. A. Noyes's text-book on Qualitative Analysis, and Professor Durkee's Notes have been used by the class. Hours could not be found for two divisions. On account of the large number of students, this class covered somewhat less ground than is usual in this course.

Six students took Chemistry 3. The ground covered and the methods of instruction have been the same as in preceding years.

BIOLOGY.

During the year most of the courses enumerated in the catalogue have been given, the following list showing the registration in each class and the number of those who received credit for the year's work:—

		<i>Registered.</i>	<i>Passed.</i>
<i>Biology</i>	1.—General Biology	27	22
"	2.—Invertebrate Zoology	11	5
"	3.—Vertebrate Zoology	11	10
"	5.—Histology	9	9
"	6.—Embryology	9	9
"	8.—Research	4	4

This table shows one very important fact: the poor equipment of those students entering the courses leading to the degree of Bachelor of Science, as evidenced by the large number dropped from the class in Biology 2, this class being largely made up of such students. It seems that this is, at least in part, to be attributed to the distinctly lower standards in the English high schools as compared with the classical schools of this region. It also raises the question as to the advisability of accepting certificates from many of these schools until they have shown a marked improvement in the training of their students. As a rule the students who come from the English schools show a training and mental

equipment distinctly inferior to those coming from the schools in which the classics predominate. The only resource, as long as we accept certificates, is to admit only those students who come to us with certificates of the best character; and, after a school has repeatedly sent us inferior students, to refuse to consider their certificates, admitting their pupils only upon examination. Such a course would undoubtedly cause us some loss of students, but of only such students as are a drag upon our classes, and such as we are later obliged to turn out after they have begun their studies here.

In the instruction of the class in General Biology the department had the assistance of Dr. F. D. Lambert, and during the last half-year both lectures and laboratory work were entirely in his charge. His methods and results deserve the highest praise. Besides the work of instruction Dr. Lambert was of great assistance in the laboratory in the preparation and mounting of specimens.

Mr. G. M. Winslow, for two years a fellow in the department, continued his studies last year, and upon passing an examination received the degree of Doctor of Philosophy at the last Commencement. His dissertation upon the structure and development of the early skull of the lower vertebrates was published as Number Five of the Tufts College Studies. Dr. Winslow has also completed a series of investigations upon monstrosities which throw great light upon a number of questions now interesting the anatomical world. It is expected that these will be published at an early date as Number Six of our studies.

Mr. W. A. Willard, Olmstead Fellow in Biology, worked in General Biology and also conducted a series of investigations upon the development of the pineal eye in the lizard, which served as a dissertation, for which he was awarded the degree of Master of Arts in June.

Mr. S. P. Capen, of the graduating class, did extra work in Biology beyond that required for the Bachelor's degree. He prepared a thesis upon the relations of the fifth nerve in the

lizard. He was given the degree of Master of Arts at the same time that he received the degree of A.B.

Dr. W. H. Ruddick, a fourth graduate student, spent the year in a study of the origin of the bones of the mammalian ear, a subject upon which there have been nearly as many opinions as there have been students. His work is already far advanced, and will be completed at an early date.

For the coming year fellowships in Natural History have been awarded to Mr. Samuel P. Capen, A.B., A.M., Tufts, '98, and Mr. Harrison S. Allen, A.B., Colby, '98.

MODERN LANGUAGES.

The year witnessed comparatively few variations from the work of the year immediately preceding, although it opened with a serious vacancy in its teaching force. The place made vacant by the resignation of Mr. Orlando F. Lewis not having been filled, all the regular classes in German, as well as the two advanced courses in French, were at first conducted by the Wade Professor; and, to increase the difficulties of the situation, the classes were unusually large. The course in German Composition seemed the only one that it was possible to omit,—an omission by no means unimportant, as the experience of recent years has proven.

Fortunately this unpromising situation was not permitted to continue for many weeks, an able assistant being shortly appointed in the person of Dr. Ernst J. Flügel, whose accession placed the department almost upon the footing of the year before. This rendered it possible to make a new departure in German 2, the more desirable by reason of the large number (49) of students taking that course. There are always, in our more elementary courses, students quite well advanced towards their degree who have delayed their beginning German, and who, following the ordinary sequence of courses, would never come to the more literary subjects, to those of proper college rank; on the other hand, they have long pursued language study and

are competent to do a considerably larger amount of work than the average of the class. To enable such to reach the more advanced courses quickly has for some time seemed a desideratum, and in individual instances has been successfully put in practice. This year seemed a favorable time to apply the principle more extensively. Accordingly German 2 was divided into two nearly equal sections, along the twofold line of ability and a desire for more rapid progress, it being understood that those in the first section, on the performance of some additional reading during the summer vacation, should continue their work in German 4. The second division was instructed by Dr. Flügel, who also conducted German 4, and who towards mid-year constituted a class in Advanced Composition, thus restoring the German side of the department to its condition in the previous year.

The disadvantages arising from excessively large classes, particularly of beginners, are becoming from year to year more apparent. To instruct in the elements of a language forty to fifty persons of altogether too widely different capacities, especially when the aim is to bring the learner quickly to the ability to use the language in a practical way, is a task well-nigh hopeless. This department has found no satisfactory way of dealing with the problem. It can only express the hope that the seed it is compelled to sow thus in a half-blind-fold fashion may lodge happily, and that it may not be too unhumanitarian in its application of the law of the "survival of the fittest." An unusually large per cent of the members of French 1 and German 1 last year were either dropped from the course at mid-year or failed of promotion at its close. In many instances it was evident that these persons were not level to college standards. The admission of such to language classes is a double injustice.

Below will be found the usual detailed statement indicating the number of students registered for the several courses in

Modern Languages, the work performed, and the instructors in charge of the courses.

COURSES.	INSTRUCTORS.	NO. IN CLASS.	WORK DONE.
German 1.	Prof. Fay.	42 31	Thomas's Grammar, Part I., and Lewis's Exercises. Die Nonna; Das Spielmannskind; Der stumme Rathsherr.
German 2 a.	Prof. Fay.	23 25	Finished "Tales from Hauff;" Der Schwiegersohn; Irrfahrten; Minna von Barnhelm; Hermann und Dorothea; two acts of Wilhelm Tell.
German 2 b.	Dr. Flügel.	24	Finished "Tales from Hauff;" Der Schwiegersohn; Irrfahrten; Burg Neideck. Composition once a week.
German 3.	Prof. Fay.	39 35	Ekkehard (275 pages); Wilhelm Tell; Die Jungfrau von Orleans.
German 4.	Dr. Flügel.	17	Wallenstein; Maria Stuart; Egmont; Italienische Reise (in part); Abfall der Niederlande (in part); Gustav Adolf in Deutschland (in part).
German 5.	Prof. Fay.	6	Emilia Galotti; Nathan der Weise; Laocoön; Faust, Part I.; Tasso; Iphigenia auf Tauris; Oberon.
German 6.	Prof. Fay.	2	Vilmar, Geschichte der deutschen Literatur. Klopstock, Der Messias (5 cantos); Herder, Der Cid; Wieland, Die Abderiten, Sommermärchen, Wintermärchen; Schiller, Anmuth und Würde, Über naive und sentimentalische Dichtung, Über das Pathetische, Die Braut von Messina.
German 7.	Dr. Flügel.	8	Advanced Composition, once a week.
French 1.	Prof. Lewis. and Mr. Earle.	15	Grandgent's Short French Grammar. Les Grandes Découvertes Modernes; Pierre et Camille; Rollins's French Reader.
French 2.	Prof. Lewis.	40	Muzzarelli's Academic French Course (second year); La Prise de la Bastille; Moi; Fleurs de France.

French 3.	Prof. Lewis.	33	Les Origines de la France Contemporaine; Britannicus; Athalie; Mithridate; Andromaque; Polyeucte. Macmillan's French Composition (first course).
French 4.	Prof. Fay.	25	La Société française au XVIIe siècle; Les Femmes Savantes; Les Précieuses Ridicules; Le Misanthrope; Walter's Classic French Letters; Cohn's Voltaire's Prose; Bernardin's Morceaux choisis des classiques français du XVIIIe siècle.
French 5.	Prof. Lewis and Prof. Wade.	5	Bowen's French Lyrics; Both-Hendricksen's La Triade Française; Essays of Sainte-Beuve; Sanderson's Extracts from Chateaubriand; Hernani; Ruy Blas; Van Daell's Extracts from Bourget; Leune's Difficult Modern French. History of Literature in Lectures.
French 6.	Prof. Fay.	2	Demogeot's Histoire de la littérature française; Darmesteter and Hatzfeld, Le XVIe Siècle en France; Le Misanthrope; Tartuffe; La Princesse de Clèves; La Bruyère's Caractères; Fénelon's Fables and Les Aventures d'Antinoüs. Several biographical articles from Didot's Biographie Générale, and articles from the Revue des deux Mondes.
ENGINEERS. French 2.	Mr. Earle.	11	Grandgent's Grammar, with College exercises. Le Chirurgien de Marine; L'Abbé Constantin; La Mare au Diable; Pierre et Camille; La Poudre aux Yeux; Le Consrit de 1813; Davies's Elementary Scientific Reader; Bigarreau; Trois Contes par Daudet.
French 3.	Mr. Earle.	18	Luquiens' Popular Science; Herdler's Scientific French Reader; Waterloo; Le monde où l'on s'ennuie; Le tour du monde en quatre-vingt jours; La petite Fadette; Rambaud's Histoire de la Révolution française.
French 4. (Half-year.)	Mr. Earle.	22	Cinq-Mars; L'Avare; Price's Choix d'Extraits de Daudet; Le Curé de Tours; La Mare au Diable; Trois Contes par Daudet.

HISTORY.

The programme of the department for the year included History 1 (General European History), with forty-three students; History 3 (English History, first half-year), with nine students; History 4 (American Colonial History, second half-year), with sixteen students; History 5 (Political and Constitutional History of the United States), with two students; and during the second half-year work by two students along the lines of the subject known as History 2, in the announcement of 1898-99.

There was nothing in the work of the year to be especially noted. It was similar in most respects to that of the year preceding.

The department still needs books, as it always will. There is an especial need of some arrangement by which a larger or smaller amount may be readily available for the prompt purchase of important new books in the field of history. The present method of requisition and purchase involves so much delay that when a book is finally obtained its usefulness for the current year is passed. This is unfortunate, because among historical writings embodying the results of the latest research are many of which the department should be able to take immediate advantage in order to meet the demands of sound instruction.

There is urgent need of an equipment of the best wall-maps, historical and physical, and the work of the department would be greatly assisted by a good collection of pictures for illustrative material. It is to be hoped that some friend of the College and of the study of history will appreciate these needs and provide for a part or all of them.

MUSIC.

In the Department of Music the subjects numbered 1, 2, and 4 in the catalogue were given. It is clear that student interest in the work of the department has not waned, though the

impression seems to have become general that even the more elementary subjects offered are to be classed as difficult. It has been the aim of the instructor from the beginning to make the courses serviceable for intellectual training, as well as for the development of taste. Freshmen who desired to take up the study of harmony have been advised to postpone their beginning of it. Those who have not heeded such advice have, without exception, found, as the work proceeded, that their powers of judgment and application were inadequate to meet the demands of the subject, and have left the class. These same students, returning in most cases, as Sophomores or Juniors, to a study of the subject, have carried the work to a successful conclusion.

The past year's course in Harmony, Music 1, was taken by twelve students. The text-book used was that of F. H. Shepard, but many exercises were dictated in addition to those contained in the text-book. Much attention was given to the harmonic analysis of standard compositions of Haydn, Mozart, and Beethoven.

A course parallel with the above was given for music teachers, in afternoon hours of Tuesday and Saturday. The class consisted at first of eight, five of whom finished the work of the year. The instruction given was adapted somewhat more to the specialist than that given in the regular course; but the same text-book was used, and the ground covered was essentially the same.

As in previous years, the opportunity to take Music 2 was offered only to those who had shown in the work of Music 1 distinct native talent for music. Of the three to whom the opportunity was offered, two undertook the work of Music 2, Counterpoint. Lectures, practical exercises in composition, and extended and careful analysis of specimens of Bach, made the subject-matter of the course. One of the students gave, toward the end of the year, a specially practical turn to his

work in composing and scoring for full band a somewhat elaborate ode for performance on Class Day.

The work of Music 4, History of Music, was carried on by lectures and theses as hitherto. The class numbered ten. The period from the death of Palestrina to the present day received special attention, but the influence of mediæval and Oriental music upon modern music was also traced.

ENGLISH.

In no year has a larger amount of work been done, whether by students or by instructors. More time has been given to personal conference with the writers. Professor Shipman has devoted probably not less than twelve hours a week to this supervision of the students' writing. Mr. Whittemore has employed the same method, and it is believed results are justifying the large expenditure of time. It is gratifying to report that the departments of English and English Literature have at length been brought together under the single name of English. For some years the work of the two departments had been growing into closer relations, until the changes required for complete union were comparatively slight. Under the new arrangement, which will go into effect immediately, a better co-ordination of studies is provided. Advanced composition will be carried on in connection with literature courses. There will be fewer opportunities for friction and consequent waste of time.

In the detailed statement following, the classes in English are given in their order as set down in the catalogue of the present year. Classes numbered 2, 3, and 4 were taught by Mr. Whittemore.

Courses (or Subjects).

1. — Once a week for the year; eighty-one students, first term; sixty-eight, second term.
- 1*b*. — Daily themes; consultation of one half-hour with each student weekly; thirteen students (Section of 1).

2. — Three hours a week first term; lectures one hour a week second term; three themes a week; individual consultation fortnightly; seventy-five students.
3. — One hour a week first term; daily themes (five a week); individual consultation weekly; seven students.
4. — Two themes a week; consultation weekly; two students.
5. — First term; one argumentative composition and one half-hour individual consultation weekly; one hour a week with class; six students.
6. — First term and second term; amount of requirement as in 5, but not in one kind of composition; all work individual; fifteen students and eight students.
8. — Three hours a week first term; five students.
9. — Three hours a week second term; three students.

ENGLISH LITERATURE AND ORATORY.

The work in Oratory was much as usual, except that it was carried farther in the more advanced classes. Elementary practice in speaking was done by forty-six students in two divisions, as required by the demands of the curriculum. During the year, at the request of the professor in charge, the Faculty voted that hereafter the study of Oratory be made elective. It is believed that what is lost in the number of students will be more than equalled in added enthusiasm of purpose, since public speaking, perhaps more than any other college study, demands the entire personality of the student. The five members of the class studying standard orations examined minutely two specimens of good public speech, and then prepared each an original address, which was criticised in plan, written out, revised, committed to memory, rehearsed, and delivered. A special class of seven divinity students practised, under comment and suggestion, the reading of hymns and scripture, and the delivery, without notes, of brief original speeches, some with and some without formal preparation.

The usual prize readings were given in May, and in April ten students co-operated in the production of an original play,

by O. F. Lewis, '95, the proceeds of which — one hundred dollars — went into the treasury of the Publishing Association. All the classes in Oratory met, as usual, one hour a week for the year.

In English Literature several new subjects were offered. Selected prose writers of the nineteenth century were studied by seventeen persons, under the guidance of Mr. Whittemore, who lectured twice a week during the first half-year, and once a week during the second half-year. Mr. Earle, during three hours, for the second half-year, directed two students, who had already studied Old English for a year, in reading the Exodus, the Daniel, Elene, Andreas, Judith, and a part each of Cædmon's Genesis and of the Phoenix, while Anglo-Saxon character and life were studied in the original sources and by lecture. Chaucer for the first time was carried through the year, six students reading with Professor Maulsby the Prologue, selected Canterbury Tales, Troilus and Cressida, and most of the minor poems. Subjects given without material change were the General View, the lectures being given by Mr. Earle, Professor Wade, Professor Knight, and Professor Maulsby, to sixty-one students, one hour for the year; American Literature, Professor Maulsby, thirty-seven students, three hours for the year; Elementary Anglo-Saxon, Mr. Earle, four students, three hours for the year; Browning, Mr. Whittemore, six students, three hours for the second half-year; English Versification, Professor Maulsby, five students, one hour for the year. The seminary in the Elizabethan drama, consisting of three students, met one hour a week for the year and accomplished sufficient work to warrant crediting each member with six term-hours.

PHILOSOPHY.

The report of the Department of Philosophy for the year records the completion of changes begun three years ago, by which Dr. Cushman has charge of all philosophical subjects

except logic. This year Dr. Cushman has had the classes in ethics and psychology in addition to the metaphysics, and the class in the critical reading of philosophers. The work in psychology of the Theological Department has also been transferred to him.

The elementary courses have greatly increased in numbers. The class in the history of philosophy had six members last year; about forty this year. The class in ethics numbered eight; that in metaphysics, nine; and that in the critical reading of Descartes, Spinoza, and Leibnitz, eight. The class in logic, taught by Professor Shipman, numbered fourteen.

The Philosophical Conference held large and successful meetings. The address by Mrs. MacDaniel, of New York, was given to an audience that filled Goddard Chapel.

LIBRARY.

The number of volumes now belonging to the Library is thirty-seven thousand six hundred and forty-six. The accessions for the year have been more than for a few years past, and amounted to eighteen hundred and thirty volumes, thirteen hundred and twenty-eight pamphlets, and two thousand and forty-three periodical numbers. Purchased with the Joy Fund, there were one hundred and forty-three volumes, most of them expensive reference books, among which were all the volumes that have been issued of the New English Dictionary. With money assessed upon the students, and credited as Term Bill Fund, there were purchased and kept in the Library twenty-two periodicals which are to be bound. The Reading-Room is also supplied with representative daily and weekly papers from the same fund.

The largest donation of the year came from Mr. C. A. Damon, and consisted mostly of medical works which formerly belonged to his brother, Dr. Howard F. Damon. They were added to the department library of the Medical School.

During the winter a special effort was made to interest

friends of the College, especially alumni, in the Library, and a list of books needed by the different departments was issued by the Tufts College Club, the result of which was that three hundred and fifteen volumes came to us from various alumni, and still more are to come. Before the published list was issued ninety-three of these volumes had been secured by Professor Brown for his own department by personal appeals among alumni. Mr. Edwin Ginn also gave for that department thirty-six volumes. Among other alumni gifts Mr. C. W. Parmenter gave eight volumes, pertaining to the history of French literature; Judge Hammond gave *Deutsche Classiker des Mittelalters*, twelve volumes; Mr. Edwin Start, from the estate of his father, thirty volumes; President Capen, forty-one volumes; Mr. A. R. Winslow, forty-three volumes; and there were purchased with the Song-Book Fund of the class of 1895, seventeen volumes. Besides the mathematical works and the others mentioned, the alumni money has been devoted mostly to increasing books in the Department of English.

Mr. Albert Metcalf has continued his interest in the Department of Music and given the Library one hundred volumes during the year. Dr. E. C. Skinner sent us seventy-eight volumes, most of them formerly owned by his father, the Rev. Dolphus Skinner, D.D. Professor Brown gave nineteen volumes, Professor Michael, eleven volumes, and the non-fraternity organization gave us the *Century Cyclopædia of Names*. From the Essex Institute, by favor of Professor Kingsley, we received one hundred and fifty volumes and one hundred and twenty-seven pamphlets. Very valuable accessions are received in exchange for the Tufts College Studies, a large proportion of which go to the department library of the Barnum Museum; last year's list numbered thirty volumes and three hundred and seventy pamphlets. From the Young People's Christian Union Fund nineteen volumes were purchased for the Divinity School.

The circulation was larger than ever before, but varies from

year to year according to the line of work elected by the students.

The increasing use made of the Library and the great number of books added during the year have kept the librarian and assistant exceedingly busy, too busy to keep a record of the work done.

POLITICAL SCIENCE.

Political Science 1 is a full year course, and consists of lectures and practical work. For the first term the class numbered sixty-three, and was composed of candidates for the degree of Bachelor of Arts, and engineering and theological students. At the mid-year the engineers and theologues left the class, on account of the pressure of other work, leaving a class of thirty-five to continue through the second term. The object of the course is to give a fairly complete illustration of the fundamental principles of political economy. As to disputed points, the aim is to throw the students on independent lines of research, with the view of securing individuality of thought and conviction. The more important problems of finance are discussed as thoroughly as the time will allow.

Political Science 2 is a one-term course set down for the first term of the college year. It is an elective course and was chosen by seventeen undergraduates. The subject treated is Ancient Law, as set forth substantially in Mr. Maine's treatise on that subject. The whole matter is very carefully expounded by lectures and discussions. This course was followed in the second term by Political Science 3,—International Law. The class was slightly larger than that in Political Science 2. The questions at issue between this country and Spain at the time stimulated to a high degree the interest in some phases of the subject. Assistant Professor Start conducted a class of four students in Political Science 5. The subject treated was General Political Science and Comparative Constitutional Law. One student took Political Science 6, which is a course of independent research, and did

most excellent work, preparing a thesis of strong merit upon the History of American Finance.

COLLEGE PULPIT.

In addition to five of the courses of Political Science mentioned above, the care of the College Pulpit devolves upon the President. There is little fault to be found with the interest of the students in the morning chapel with which each day's work begins. Although the requirement of each student is only fifty per cent, the average daily attendance is much larger than that. For most of the mornings of the year the church is well filled. The students as a rule appear to enjoy the opportunity of meeting together, and no doubt find interest and profit in the service. If some enrichment could be had of the musical exercises there would be unquestionably a quickening of the interest. So far as the Sunday service is concerned, it must be confessed that it fails to command the attention of the student body which such a service should. It is my conviction that a systematic effort should be made to enhance the importance of this service in the minds of the undergraduates. Just how this is to be done it is not easy to say. I should be glad, however, if the suggestion in former reports, of bringing to the College Pulpit distinguished men of various communions for two or more Sundays at a time, could be carried out. It could thus be determined whether the desire for fresh thought and individuality in pulpit methods may not be at the bottom of the present indifference. At all events, no effort should be left untried that will give promise of awakening a real love of divine worship.

I beg leave to call attention to the appended reports of professional and other departments of instruction.

ELMER H. CAPEN.

TUFTS COLLEGE,
September 21, 1898.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President:—

Very little in the form of report requires to be said of the Divinity School. The whole number of students on the roll during the year was twenty-five. Ten of these were graduated in June, nine receiving the degree of B.D., and three, at the same time, receiving the A.M. Of these graduates three are settled in Massachusetts, one in New York, two in Vermont, one in New Hampshire, one in Rhode Island, and one in Maine. One student who took a special course was called to a parish in New York. Three of this class came to the school from Massachusetts, two from New Hampshire, one from Vermont, two from Ohio, one from Minnesota, and one (special) from California. This geographical constituency is of itself interesting. It is also worth noting that but three of these students returned to take up the work of the ministry in the states from which they came.

The demand from the parishes for well-equipped preachers and pastors is constant; and an experience of twenty-nine years in the Divinity School shows that the call for thoroughly furnished and trained ministers is a growing demand. These facts are encouraging both for the School and the Church it aims to serve. In this connection it may also be said that more and more the School invites students, not only of native ability and consecration, but of scholarship,—A.B.'s for a three years' course of theological study, and an ample preparation for entrance to the College of Letters for a four years' course of theological study. And we are able to report that students ardently respond to the increasing requirements for entrance upon the work of the school, and to the severer curriculum from year to year.

The work of the year was greatly enlarged and enriched by the lectures of Rev. Frederick W. Hamilton, Rev. Charles R. Tenney, Rev. Edward L. Houghton, and Rev. Henry Blanchard, D.D.

Respectfully submitted.

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 21, 1898.

THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President:—

I have the honor to submit to you herewith the report of the Medical School for the year 1897-'98. That the school is in an exceedingly prosperous and flourishing condition is perhaps best shown by the progressive annual increase in the number of students, notwithstanding the higher standard of scholarship exacted both in the entrance and the final examinations. At the present writing there are enrolled in the school two hundred and fifty students, twenty per cent of whom are women.

Several changes have occurred in the Board of Instruction during the past year. To the sincere regret of all, Dr. John L. Hildreth has found it necessary to resign the office of dean, though still retaining the chair of Clinical Medicine. Dr. Walter L. Hall has resigned from the chair of Theory and Practice, and Dr. Hough has been compelled, because of increased duties at the Institute of Technology, to resign his position as instructor in Physiology. New instructors have been appointed as follows: Drs. Theodore C. Erb and Frank E. Bateman in Obstetrics, Dr. Albert Prescott Mathews in Physiology, Dr. Elizabeth Riley in Gynæcology, Dr. Richard F. Chase in Clinical Medicine, Dr. Charles D. Knowlton in Theory and Practice of Medicine, and Dr. Richard F. O'Neill in Apparatus and Bandaging. Dr. Eugene Thayer has been promoted to the position of Demonstrator of Anatomy.

Leave of absence has been granted to Assistant Professor Leary, who has been appointed by the United States government to investigate and report upon the contagious diseases of Porto Rico, — a well-deserved recognition of Professor Leary's ability as an investigator and trained scientific observer. The

following officers of the Medical School served in the army or navy during the late war with Spain: Drs. Howard S. Dearing, Gardner W. Allen, Richard F. O'Neill, F. W. Pearl, and Frank E. Bateman.

The school Dispensary, as was expected, has proved a valuable addition to the teaching facilities of the school. It has been self-supporting from the start, a minimum fee sufficient to defray the actual cost of medicines furnished being exacted from nearly every patient. During the first six months of the year 1898 nearly one thousand patients were treated.

Many interesting and valuable pathological specimens have been presented to the Museum, and the Library has been enriched by valuable contributions, notable among which may be mentioned the large and complete collection of works on Diseases of the Skin, the gift of Mr. Calvin Damon, the same being the private library of his brother, the late Dr. Howard F. Damon, and contributions from Professors Thayer, Hildreth, Briggs, Cumston, and others.

No report of the Medical School can be regarded as complete in which mention is not made of the great loss which the school has sustained in the death of Mr. Joy, to whose energy, courage, and clear-sighted business knowledge the school has always been deeply indebted. Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE MEDICAL SCHOOL,
Boston, Mass.

THE BROMFIELD-PEARSON
SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

To the President:—

During the past year the courses in shopwork given at the school have been attended by seventy-three students, and eight students have taken the one-year preparatory course. Five courses are given in shopwork, each continuing for one term, although during the past year the Senior work was continued throughout the year. The courses are as follows: Carpentry and Turning, Foundry and Pattern-work, Forging, Vise and Machine Tools, Project work, including the Senior thesis work.

The machines in process of construction, and now nearly completed, are as follows: a rotary transformer, a direct connected high-speed motor and Mordy type alternator, an electric welding-device, a reflecting galvanometer with two-inch magnetic shield, a synchronous motor with phase indicating device, an ironclad motor of special design for use as a face-plate pattern lathe. The last-named machine is designed to be a useful tool for our pattern-shop, after having served its educational function in the electrical department. The one hundred and fifty light dynamo, designed and partly constructed by members of the class of '96, is now running, and is of capacity sufficient to furnish light for the entire building.

The teaching force, equipment, and the building are now being severely taxed by the demands made by the engineering department, and provision for more space cannot be long delayed.

Respectfully submitted.

GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE,

September 21, 1898.

THE BARNUM MUSEUM.

REPORT OF THE BARNUM MUSEUM.

To the President:—

The year has been one of slight changes. The sun-fish presented a year ago by Dr. Harold Williams, and the fur seals purchased at about the same time, have been mounted in the best manner by Ward. To accommodate the seals, as well as the large sea-lion, previously in the museum, a large case has been built by the janitor, and these animals are now safely housed.

The most important additions to the collections during the year are the collections of marine animals made at Casco Bay, during the summer, by the Marine Laboratory at South Harpswell, Maine. These amount to nearly one hundred species not before represented in our collections.

Among the changes proposed for the coming year are the following. The building of cases to be placed on the rail of the gallery, in which we can display the collection of shells, insects, and Indian implements now packed away. In the basement, racks are to be built to accommodate the trays containing the minerals and fossils needed for class work, since as at present arranged, some are inaccessible, while others are liable to become separated from the labels and thus lose a great part of their value. The fitting-up of the large exhibition-room in the new wing of the Museum Building must be postponed, as that room is needed for the larger classes in several departments of the College.

A large amount of work is needed upon the collections, other than those on exhibition. We have a large amount of material which would be of value in exchange. This should be put in shape so as to be available, and this work could be done by the

more advanced students under the direction of the heads of the departments, but there should be a slight sum of money available to pay for such work. An appropriation from the departmental funds to be expended in such work would result in large gains to the collections, and would at the same time aid several deserving students.

The equipment of the Biological Laboratories has been slightly increased during the year by the addition of books, glassware, and smaller instruments. There is a pressing need of more microscopes, while a small amount of physiological apparatus would be a distinct gain in the teaching equipment, as would some of the Ziegler wax models of the development of animals.

The Library in the Barnum Museum shows a gratifying increase. The additions for the year number seven hundred and ten entries, representing one hundred and twenty-three volumes and five hundred and eighty-seven parts of serials and pamphlets, making the total now in the department library nine hundred and ninety-four volumes and twenty-seven hundred and seventy parts and pamphlets. The additions came from the following sources: Essex Institute, two hundred and twenty-six; exchange with Tufts College Studies, two hundred and four; purchase, one hundred and fifty-six; Mr. Alexander Agassiz, ninety-one; Dr. W. H. Ruddick, thirteen; J. S. Kingsley, seven; Mrs. Mary O. Rogers, four; C. B. Wilson, C. A. Damon, U. S. Government, and transfer from the College Library, two each; Dr. F. C. Kenyon, one.

The retirement of Professor Marshall from active duty has thrown the supervision not only of the Biological Laboratory but the care of the Museum, upon the undersigned.

Respectfully,

J. S. KINGSLEY.

TUFTS COLLEGE,
September 21, 1898.

THE SUMMER SCHOOL OF
BIOLOGY.

REPORT OF THE SUMMER SCHOOL OF BIOLOGY.

To the President: —

A new feature of the department this year was the institution of a Summer School of Biology upon the shore of Casco Bay, at South Harpswell, Maine. A few friends of the College contributed a small amount of money, and with this a cottage, which served as laboratory, was hired, supplies were bought, and apparatus transported from the College. The school was opened June 28 and closed August 6. Drs. Lambert and Winslow and Mr. Willard acted as assistants in the laboratory, Dr. Lambert giving besides a course of lectures upon algæ. The total number of workers in the laboratory was ten, all that the building could accommodate.

This summer school was regarded by all connected with it as an experiment. The locality was new to us all, and it was a serious question as to how far it would receive support. The experience of the summer was satisfactory to all. The location is one of the most favorable for such a station upon the whole New England coast, while its ease of access is a distinct point in its favor. Animals and seaweeds were very abundant, and on the whole no better location could be desired.

The success of the school for the past summer was such as to make it desirable to continue it as a permanent institution, but if that be done a building better adapted for the purposes of a laboratory must be had. For less than one thousand dollars land can be bought, a suitable building erected and equipped, and boats and apparatus for collecting provided, while there is no doubt that the annual attendance would be sufficient to meet the running expenses. Such a station would have

great value to the College. It would furnish us with the larger part of our laboratory supplies ; it would permit us to increase the collections in the Barnum Museum ; it would give us large numbers of marine animals for exchange ; and last but not least, it would give our students a chance to study living animals under the most favorable circumstances, and at a very moderate expense.

I am, with great respect, yours truly,

J. S. KINGSLEY,

Professor of Biology.

TUFTS COLLEGE,

September 21, 1898.

THE SUMMER SCHOOL OF
CHEMISTRY.

REPORT OF THE SUMMER SCHOOL OF CHEMISTRY.

To the President:—

Nineteen students were in attendance, against fourteen last year. Of these, eleven were from the College, three teachers in public schools or academies, and five students in high schools or academies or graduates from such institutions. Ten took Chemistry 1, seven Chemistry 2, five Chemistry 3, and one Chemistry 10. These courses in Chemistry have been kept up to the standard set for the college year. While the required hours for lectures and laboratory work in the Summer School courses are only equal to those allowed in the college year, I am convinced by two years' experience that the same student accomplishes more in a course taken in the Summer School than he does by taking it in the college year. I am not saying this because I wish it repeated as an advertisement of the Summer School, but because it points toward what may be a fact,—that most students make a mistake in taking many different subjects of study at one time. In this growing tendency of the students of the College to take the subject of Chemistry in the summer there may be a practical solution of the problem of how to handle the large and growing laboratory divisions in General Chemistry and Qualitative Analysis without increasing the teaching force. The alternative of further sub-division seems no longer to exist, on account of the regular college programme.

The Summer School has been fortunate in that it could retain the services of Dr. Leighton.

Respectfully submitted.

FRANK W. DURKEE.

TUFTS COLLEGE,
September 21, 1898.

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OF THE

PRESIDENT

OF

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ANNUAL REPORT
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1900

PRESIDENT'S REPORT.

1898-99.

To the Honorable and Revered the Trustees of Tufts College:—

GENTLEMEN:— The President of the College has the honor to submit the following report for the academic year 1898-99; namely, from September 21, 1898, to September 20, 1899.

THE TRUSTEES.

I have to record at the outset the sudden death of the late President, John D. W. Joy, which occurred only a few days after the beginning of the college year. Since the College was founded, no member of this body has ever shown a deeper or more active interest in its affairs, financial and educational, than Mr. Joy. Though he was not a man of what we call a liberal education, yet by his careful and prolonged business training, by his powers of accurate observation, and by a marvellous endowment of common sense, he seemed without effort to take a broad and wholesome view of the educational situation and needs of the institution. Almost every step that has been taken during the last twenty years to broaden the scope and enlarge the opportunities and functions of the College has been taken with his endorsement, often at his suggestion, and under the guidance of his wisdom. What the College is in the educational world to-day is due in no slight measure to the breadth of view and progressive spirit of Mr. Joy. Certainly many of the most important undertakings that have given us our present standing could never have been

carried through without his cordial and effective co-operation. But perhaps the chief value of his service was on the financial side. He became a trustee at a time when the business affairs of the College needed wise oversight and a strong hand. He faced the situation with faith and courage. By shrewd and painstaking business sagacity, and by judicious investments, the property of the College was materially increased. The fact that he was a Trustee inspired confidence. Important gifts were secured. A new impulse was given in every department. He devoted time without stint to the affairs of the College. No matter how great the pressure of his own private business, nor how multifarious the demands upon his energy, he always found time to consider college matters. Nor was this all. Generous during his lifetime, he provided by will for a total gift of one hundred thousand dollars.

Within the past few weeks the Trustees have suffered the loss of another associate in the death of Charles Whittier, who had been a Trustee since 1880, having been elected at the same time as Mr. Joy. Mr. Whittier was a man of refined and sensitive nature and very modest in his estimate of himself; but he was a man of sterling integrity and sound judgment. As an expert mechanic, at the head of a great industrial enterprise, he was in a way to render and did render much assistance of value in developing our engineering departments. He was a generous giver himself, and inspired others to give. He was a man also of optimistic temper and progressive spirit. The deprivation of his counsel will be long and seriously felt.

There is one other person, though never a Trustee, whose name in this connection should be mentioned. I refer to Mary T. Goddard, who passed from this life during the week preceding the beginning of the college year. I refer to her because she was present with her husband, the late Thomas A. Goddard, at the founding of the College and

maintained an active interest in it to the time of her decease. With her there passes from view almost the last of those who may be styled the founders of the College. Mrs. Goddard manifested her interest by an unremitting and open-handed generosity. Whenever anything was wanted, whether of a large or a trivial nature, for the advancement and work of the College her purse-strings were unloosed. She gave as a memorial to her husband and in fulfilment of a wish cherished between them our exquisite Chapel, which for generations to come will fitly crown our beautiful hill-top. She gave also our gymnasium. By her will she bequeaths sixty thousand dollars, the income of one half to be used for the benefit of the Divinity School, and the income of the other half for the benefit of the College of Letters. Surely in her case the words of Scripture find literal fulfilment: "Blessed are the dead who die in the Lord; for they rest from their labors and their works do follow them."

THE FACULTY.

Our faculty roll has lost during the year its most illustrious name. Thomas Jefferson Sawyer, D.D., LL.D., Packard Professor of Theology, Emeritus, on the twenty-fourth day of August, at the age of ninety-five years and seven months, died, in the house which he had made his home for thirty years. Dr. Sawyer has rendered many distinguished services to the church and the world which it would be impossible to enumerate here; but it would be improper for us to forget that the movement out of which Tufts College sprang had its first inception in his brain. He conceived the idea. He set the forces in motion. He called the first meeting to consider the subject of establishing an institution of college rank, and he labored with unflagging energy and zeal for the accomplishment of the work. His efforts met at once with hearty co-operation from

Hosea Ballou, 2d, Otis A. Skinner, and Thomas Whittemore, among the clergy, and from Silvanus Packard, Thomas A. Goddard, and Benjamin B. Mussey, among the laity. It is true that without their help and the help of a multitude of others only second to them in importance he never could have succeeded, yet it is equally true that the beginning was with him ; and the interest which he then showed continued unto the end. Naturally, the presidency of the College at the outset was first offered to him. But he declined it. When, however, the time came for the establishment of the Divinity School, he consented to come here and assume the responsibility of the undertaking. In 1869 he was elected to the Packard Professorship, and in the autumn of the same year he was installed in office. The present Dean of the School, Dr. Leonard, was associated with him, and they together began to give courses of instruction having the Christian ministry specifically in view. From that beginning has grown our present well-equipped Divinity School. Though for some years, on account of a failure of eyesight, Dr. Sawyer has been unable to perform any active service, yet as he retained his mental powers in all their clearness and force to the end of life, his interest in the welfare and progress of the School continued without abatement, and he was ever ready by his advice, by his presence among the Faculty and students, and by his voice and pen to do what he could for sound theological education and genuine culture. As a man he was cast in a large mould. Almost physically perfect in the prime of his manhood, his intellectual endowment was of the highest order. At the time when theological controversy raged from one end of the continent to the other he was at every critical point of battle, and he never left the field of conflict except as a victor. No warrior ever dealt him a blow that caused his eye to droop or his tongue to falter. But notwithstanding the eagerness of the fray, and the heart-burnings and jeal-

ousies and even hatreds which took possession of many minds, his urbanity, simplicity, and gentleness never forsook him. No one ever crossed swords with him, no one ever met him in any serious capacity, without going away with the conviction that here was a man. To his skill as a controversialist, his eloquence and dignity as a preacher, his accomplishments as a newspaper editor and writer of books, he added ripe scholarship at a time when scholarship meant much. He was a scholar of the all-round type, a type which in these days of specialization has almost vanished. The life of such a man is an inspiration, and he leaves behind him in the heart of a great and growing church and a university that is full of promise an affectionate veneration which is monumental.

Appointments in the teaching force have been made as follows:—

GEORGE W. KAAAN, M.D., *Instructor in Gynæcology.*

ALBERT PRESCOTT MATHEWS, A.B., PH.D., *Instructor in Physiology, promoted during the year to Assistant Professor of Physiology.*

THOMAS WHITTEMORE, A.B., *Assistant Professor of English and Instructor in the History of Art.*

HERBERT E. CUSHMAN, A.M., PH.D., *Professor of Philosophy.*

FRANK G. WREN, A.M., *Assistant Professor of Mathematics.*

HENRY C. METCALF, A.M., PH.D., *Lecturer on Political Science.*

EUGENE T. MCNAMARA, M.D., *Instructor in Medical Therapeutics.*

LUDWIG DEMETER, *Instructor in Modern Languages.*

ELIZABETH A. RILEY, M.D., *Assistant in Gynæcology.*

EDWARD W. BRANIGAN, D.D.S., *Professor of Clinical Dentistry.*

GEORGE A. BATES, D.D.S., *Professor of Dental Histology and Microscopy.*

FREDERICK M. HEMENWAY, D.D.S., *Professor of Dental Art and Mechanism.*

JOHN C. MUNRO, A.B., M.D., *Professor of the Principles and Practice of Surgery.* (In the Dental School.)

BYRON H. STROUT, D.D.S., *Instructor in Anæsthesia.*

FRED C. MERRILL, D.D.S., J. ROSS HARDY, D.D.S., and EDWARD A. QUINN, D.D.S., *Instructors in Mechanical Dentistry.*

WILLIAM P. HOUSTON, D.D.S., JOHN W. FORBES, D.D.S., EDGAR O. KINSMAN, D.D.S., JAMES R. PIPER, D.D.S., KNUT J. LUTROPP, D.D.S., HENRY H. PIPER, D.D.S., FREDERICK I. FOGG, D.D.S., WILLIAM RICE, D.D.S., WALTER I. BRIGHAM, D.D.S., and BURLEIGH C. GILBERT, D.D.S., *Instructors in Clinical Dentistry.*

HAROLD WILLIAMS, A.B., M.D., having resigned the Professorship of Pædiatrics, has been appointed *Professor of the Theory and Practice of Medicine.*

H. B. CHANDLER, M.D., *Professor of Ophthalmology.*

H. D. ARNOLD, A.B., M.D., *Assistant Professor of Clinical Medicine.*

Messrs. Cushman, Whittemore, and Wren are promotions from the rank of instructor in view of ability that has been tested and proved. Dr. Metcalf's appointment as lecturer is only temporary, the intention being to make him Professor of Political Science, to fill the chair in that subject created by the bequest of the late Cornelia M. Jackson.

Re-appointments for one year have been made as follows:—

GARDNER W. ALLEN, A.B., M.D., *Instructor in Genito-Urinary Surgery.*

HORACE D. ARNOLD, A.B., M.D., *Instructor in Clinical Medicine,* promoted to Assistant Professor.

GEORGE F. HARDING, M.D., *Instructor in Dermatology.*

CHARLES F. PAINTER, A.B., M.D., *Instructor in Orthopædic Surgery.*

EUGENE THAYER, A.B., M.D., *Assistant Demonstrator of Anatomy.*

HOWARD S. DEARING, A.M., M.D., *Instructor in Clinical Medicine.*

HERBERT W. WHITE, M.D., *Instructor in Clinical Medicine.*

EDWARD L. TWOMBLY, A.B., M.D., *Instructor in Clinical Medicine.*

E. CHANNING STOWELL, A.B., M.D., *Instructor in Children's Diseases.*

GEORGE A. WEBSTER, M.D., *Instructor in Otology.*

JOSEPH C. STEDMAN, M.D., *Instructor in Rectal Diseases.*

EDWARD E. THORPE, M.D., *Instructor in Medical Chemistry.*

ROBERT N. HARTMAN, A.B., PH.D., *Instructor in Qualitative Analysis.*

CHARLES H. CHASE, B.S., *Instructor in Shopwork.*

HARRY GRAY CHASE, B.E.E., *Instructor in Electrical Engineering.*
 CHARLES C. STROUD, A.B., M.D., *Instructor in Physical Training.*
 SAMUEL C. EARLE, A.M., *Instructor in French and Assistant in English Literature.*

WILLIAM R. WHITEHORN, A.M., *Assistant in Qualitative Analysis.*
 LIZZIE MAUD CARVILL, A.B., *Instructor in Physical Training for Women.*

CHARLES D. KNOWLTON, M.D., *Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M.D., *Assistant in Materia Medica and Therapeutics.*

WILLIAM R. WOODBURY, A.B., M.D., *Lecturer on Hygiene and Instructor in Nervous Diseases.*

WALTER J. OTIS, M.D., *Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, A.B., M.D., *Lecturer on Laryngology.*

GEORGE A. BATES, D.D.S., *Lecturer on Histology.*

ETHEL MONROE HAYES, A.B., *Assistant Librarian.*

The following were appointed Proctors :—

HERBERT E. CUSHMAN,
 ROBERT N. HARTMAN,
 VIRGIL L. LEIGHTON,
 CHARLES C. STROUD.

The whole number of students admitted to the College in all departments is two hundred and fourteen. They are distributed as follows :—

College of Letters	91
Divinity School	8
Medical School	120
Bromfield-Pearson School	5
	214

The whole number of students enrolled in the College is five hundred and ninety-nine. They are distributed as follows :—

College of Letters :—

Graduate	7
Senior	50
Junior	59
Sophomore	64

Freshman	76	
Special	39	
		295
Divinity School:—		
Senior	6	
Middle	4	
Junior	4	
Sub-Junior	4	
Special	2	
		20
Medical School:—		
Graduates	4	
Senior	29	
Junior	45	
Sophomore	54	
Freshman	68	
Special	51	
		251
Summer Schools	28	
Bromfield-Pearson School	5	33
		599
Deduct names appearing twice	15	
Total number of students	584	

The whole number of women students in all departments is one hundred and forty-six. They are distributed as follows:—

College of Letters	97
Divinity School	2
Medical School	47
	146

The whole number of degrees given in course at the Annual Commencement was eighty-five. They were distributed as follows:—

Bachelor of Arts	34
Bachelor of Philosophy	1
Bachelor of Science:—	
In Civil Engineering	7
In Electrical Engineering	10
In Medical Preparatory	1

In Biology	2	
In General Science	2	
		— 57
Bachelor of Divinity	7	
Doctor of Medicine	16	
Master of Arts	5	
		— 28
		—
Total number degrees in course	85	

As this year marked the complete transition from a three years' course to a four years' course in the Medical School, the number of candidates for the degree of Doctor of Medicine was small. The class was composed in part of those who had been left over for various causes from previous years, and in part of those who had come in for the work of the senior year from other schools. Hereafter there will be no occasion for a reduction from the usual average at graduation. Indeed, the number of candidates for degrees in all departments is likely to increase as time goes on. This fact presents a problem of no slight consequence in regard to the conduct of commencement exercises. When Goddard Chapel was first erected we seemed to be provided with ample facilities to render our public exercises of every kind dignified and impressive. Since we have been taking on in some respects the character and proportions of a university our accommodations are becoming yearly more and more straitened. Already the chancel is too small to furnish seating to the Trustees and Faculty, not to speak of invited guests. Moreover, if we were to attempt to seat in the body of the church the candidates for degrees and their immediate friends there would be no room for Alumni and other interested spectators. It is quite impossible, therefore, to impart to the commencement exercises the solemnity and dignity which should attend a high academic function. It is useless to disguise the need of a building with a room

adapted for important public ceremonies,—ceremonies which attract large numbers of people. An auditorium of large seating-capacity and an ample platform or stage are fast becoming almost indispensable.

We are fortunate in having secured relief for Commencement in one important respect. In May last the Trustees decided to rebuild on a much larger scale the Goddard Gymnasium. The work is now approaching completion. The size of the original building has been nearly doubled. A fine ball-cage, an excellent running-track, and ample bathing facilities have been added to the facilities furnished in the old building. The athletic demands for many years to come are fully provided for. But this is not all. The increased floor space of the hall and galleries will enable us to set tables for upwards of seven hundred, nearly eight hundred, people.

In consequence of the demand of the Engineering Department for additional room and better means of giving instruction, the Trustees have decided to accept the proposition of Mrs. Rebecca T. Robinson for the erection of a building as a memorial of the late Charles Robinson. The site chosen is on the easterly side of College Avenue, facing Professors Row. The plans have been perfected, the contract awarded, and the work is already considerably advanced. The building is to be one hundred and twenty feet in length by fifty feet in width, three stories in height above the basement. It will also be fitted with working laboratories. It will be of red brick with terra-cotta trimmings, and although plain and simple, as befits the uses to which it is to be put, it will be a graceful, dignified, and impressive structure. It will meet a want which has long been seriously felt by our engineering teachers, and will afford satisfaction and comfort to students and instructors alike.

The construction of this building puts before us with

unusual force the need of a central power and heating station. The importance of a building for power and dynamo rooms has long been recognized. Of course, as our facilities for the various forms of shopwork increase, this importance becomes more emphatic. The increase in the number of our buildings, the placing of one or more boilers in each one, renders the question of heating and janitor service one of growing complication. During the summer a plan of heating all our buildings by pipes radiating from a central station has been carefully studied. The project appears to be feasible, and there is little doubt that a great economy in fuel and service could be effected. Other advantages from such a scheme will readily suggest themselves. The main difficulty arises in regard to the first outlay. The total cost is estimated at twenty-five thousand dollars. If some friend would kindly give us that amount he might be sure of rendering a very great service to our Engineering Department, and at the same time conferring a favor upon the entire College.

The various professional schools are, on the whole, in a satisfactory condition.

It ought perhaps to be said in frankness that the decline in attendance in the Divinity School is a source of some anxiety to those who are interested in strengthening the Christian ministry by recruits who have received an adequate literary and theological preparation. Whether this decline is occasioned by the policy of requiring tuition of theological students, or by raising the standard of admission to the School, or whether both of these things have had some effect, it may be difficult to determine. In my own judgment, it is more likely to be due to the weakening of the religious motive which is characteristic of the time and which is apparent in nearly all the churches, and to the overwhelming attractions which are presented to young men in the other professions. The accompanying report

from the Dean of the Divinity School deals with the situation in a thoughtful and able manner. I trust that means may be taken to give it a wide circulation.

The Medical School has had another year of continued prosperity. The number of students enrolled in it included fifty from the Boston Dental College, who came in by special arrangement to take their anatomy with us. The number is likely to be maintained during the coming year. Apart, therefore, from the demand that is likely to be made upon us by the absorption of the Dental College, our quarters, which, when the building on the corner of Shawmut Avenue and Rutland Street was provided, seemed to be ample for a good while, already begin to appear too small. With our new responsibilities additional space is indispensable. The first thought of the Trustees was to purchase land in the same block where our present building is situated. But the exorbitant prices put upon their lands by the adjoining owners, together with the probability of rapid growth in the immediate future, led to the conclusion that a somewhat larger lot is advisable. Accordingly, a piece of land containing upwards of half an acre, on the corner of Huntington Avenue and Bryant Street, has been purchased, with the intention of erecting upon it at least one building during the coming year, and with the view at no distant day of assembling in that spot our entire medical and dental plant.

The taking on of the Boston Dental College as the Tufts College Dental School, for which authority was given by special act of the Legislature, was done only after careful study and thorough investigation of the history and work of that institution. The large number, high character, and excellent professional standing of its graduates convinced the Trustees that the step was one that could be taken with safety. The limitations under which a dental college that is not affiliated with a medical school labors in the State of

Massachusetts also convinced them that they could render a real service to dental education by this action. Moreover, the close connection that could be established between the two Faculties of medicine and dentistry made it evident that both economy and efficiency would be promoted by the union.

Statements somewhat in detail of the several departments of instruction are given below :—

LATIN.

The work in Latin for the year was along the lines previously laid down. The Freshmen, in two divisions, read Livy, Book 21, Cicero, *De Amicitia*, and most of the Odes of Horace, with several of the Epodes as well. Forty-six students were enrolled in the course at the end of the year.

Into Latin 2, the second year course, some new reading was introduced with good results. The *Phormio* of Terence, with lectures on the theatre and related matters, and the *Germania*, with parts of the *Agricola* of Tacitus opened the work as heretofore. Then followed the *Cena Trimalchionis* of Petronius and the Cupid and Psyche story from Apuleius, with a small selection of Pliny's letters to close the year. Sixteen students were enrolled.

In Latin 3, Juniors and Seniors, eight in number, read copious selections from Books 1 to 6 of the *Annals* of Tacitus, and in the second term made as thorough a study of Juvenal and Martial as time allowed. The course, taken as a whole, gave them a good idea of the life of the early Roman Empire.

Two Seniors spent three hours a week for one term in the study of Latin inscriptions. Numerous lectures formed the basis of the work; these were supplemented by Egbert's manual and the careful reading of a large amount of epigraphical material. A class of eight, all Seniors but

one, devoted three periods a week for the second term to the reading of a selection of Cicero's letters.

The usual composition courses, 5 and 6, were given, the former with fifteen, the latter with eight, students. Three Seniors and one Junior elected Latin 7, an advanced composition subject, then given for the first time.

One Senior, Mr. H. H. Richardson, completed the work for the degree of A.M. in four years. He spent a large amount of time in the study of the *Bucolics* and *Georgics* of Vergil, presenting a paper dealing with certain phases of the relationship between Vergil and Theocritus.

The department was so fortunate as to secure six of Kiepert's classical wall maps, the gift of two friends of the College. They are mounted in the Latin room of Ballou Hall. It also benefited materially in the general increase of library facilities.

GREEK.

Course 5 was in charge of Professor Schneider. Seven students attended three recitations a week throughout the year. The text-books used were *Idyls of Theocritus*, *Plato's Symposium*, *Odes of Pindar*. For reading at sight, one hour a week, text-books, *Lucian's Dialogues*, *Dion Chrysostom's Hunters of Eubœa*. Lectures upon the *Symposium*, the characteristics of the various speakers, their speeches, and the relation of the various speeches to one another, and upon the various views of the interpreters concerning the object Plato had in mind in writing the *Symposium*, etc.

Course 6 was also in charge of Professor Schneider. Five students attended this course having three recitations a week throughout the year. Text-books, *Plato's Republic*, *Aristotle's Ethics*. For reading at sight, one hour a week, text-books, *Lucian's Dialogues*, *Dion Chrysostom's Hunters*

of Eubœa. Two students graduated with honors; the other three with honorable mention.

The work of the classes conducted by Assistant Professor Wade was as follows :—

GREEK 1. The full entrance requirements. In addition to the regular beginners in Greek, this course was taken without allowance of credit by several Seniors, as a normal course in preparation for teaching the language. The instructor hopes to be able to offer increased facilities for such work in the future.

GREEK 2. Plato, *Apology* and *Krito*; Homer, *Odyssey*, *Phæacian Episode*; Euripides, *Medea*; Selections from the Greek Lyric Poets (Tyler's edition).

GREEK 3. Andocides, *De Mysteriis*; Lysias, eight orations (Morgan's edition); one play each of *Æschylus*, *Sophocles*, *Euripides*; Selections from the Lyric Poets (Hiller's *Anthologia Lyrica Græca*). The course was accompanied by lectures on the orators, and on the development of the drama, with consideration of the recent theories and discoveries in the archæology of the Greek theatre.

GREEK 7. A class in Greek Composition and sight reading, principally for Freshmen and Sophomores.

GREEK 8. For advanced students. Greek Composition and sight reading; lectures on the history of Greek literature.

MATHEMATICS.

The several courses in Mathematics were given by Professor Brown in the College of Letters, and Assistant Professor Wren gave the courses in the Engineering Department. Professor Brown gave Mathematics I in two sections, each three times a week for the whole year. He also taught a class in Plane Analytic Geometry three times a week the first term, a class in Higher Algebra three times a week the second term, a class in Spherical Trigonometry three times a week the first term, a class in Higher Plane

Curves and Analytic Geometry of Three Dimensions three times a week the second term, and a class in Differential and Integral Calculus three times a week the whole year.

Considerable difficulty was experienced in obtaining hours that were free for both instructor and students who desired to elect in some of the courses. As a consequence some students were compelled to abandon their intention to elect in the Mathematical department. This difficulty is one that it is impossible to overcome, as students from several classes often desire to elect the same course, and at whatever hour the instructor is disengaged one or more of the class will have that hour occupied with work in some other department.

The work of Assistant Professor Wren for the year was principally the Mathematics of the Engineering department. All four classes in that department pursued the subject throughout the year. In addition to this work, he assumed charge of four courses in the regular department.

His work may be tabulated as follows :—

First Term.

Engineers.

		<i>Hours.</i>
Freshmen . . .	Algebra and Plane Trigonometry . .	6
Sophomores . .	Analytic Geometry	3
Juniors	Calculus	3
Seniors	Calculus (Advanced)	2

Regulars.

Mathematics 9 .	Determinants (6 students)	3
Mathematics 10 .	Differential Equations (4 students) . .	2

Second Term.

Engineers.

Freshmen . . .	Analytic Geometry	4
Sophomores . .	Calculus	3

Juniors	Calculus (Advanced)	2
Seniors (Elective)	Least Squares (5 students)	2

Regulars.

Mathematics 8 .	Advanced Calculus (4 students) . .	2
Mathematics 13 .	Theory of Functions (3 students) . .	3

CIVIL AND MECHANICAL ENGINEERING.

During the year Professor Bray gave instruction in the following subjects : Applied Mechanics, Applied Mechanics Laboratory, Hydraulics, Railroad and Highway Engineering, Masonry, Sewerage, and Structural Design.

In Applied Mechanics there were three recitations per week in text-book work, together with the solution of many examples, selected with a view to make clear the principles taught, and to familiarize the student with some of the problems occurring in engineering practice. Work in the Applied Mechanics Laboratory was limited by reason of space and apparatus. A commendable degree of interest was manifest on the part of most of the class, some of whose note-books are models of neatness and accuracy. The study of Hydraulics was carried through the year, there being three periods during the week. The character of the work was about the same as that of preceding years, being fully equal to it in quantity and quality. The above subjects were taken by Civil and Electrical Engineers.

Railroad and Highway Engineering, taken mainly by the Civils, was carried through the Senior year three times a week. The course is conducted by means of text and field books, notes, field practice, and work computing, and in the drafting-room.

The course in Sewerage for the Civils was taken three times a week in the second term of the Senior year. Besides the regular text-book work, subjects were assigned for special study and investigation. Inspection was made of plants at considerable distance, data collected, and draw-

ings made, the whole being embodied in a report read before the class.

Masonry is taken by the Juniors during the second term three times a week. Structural Design, twice a week of two hour periods, carried on mainly by personal instruction in the drafting-room. A rough sketch or outline is given the student from which to develop the completed drawing and bill of materials.

DRAWING AND MECHANIC ARTS.

The vacancy made in the teaching force by the loss of Mr. Frank E. Sanborn necessitated some radical changes in the department of Drawing. The Sophomore classes in Mechanism and Gearing were united, and the courses changed, to better adapt them to the new conditions. The instruction was given by Professor Anthony, who also taught the class in Elementary Machine Drawing, formerly conducted by Mr. Sanborn. In addition to the extra burden incident to the above changes, the department was deprived of the assistance formerly given by Professor Daniels in the Freshman course in Mechanical Drawing. Mr. C. H. Chase had entire charge of the Junior Machine Drawing.

The course in Mechanic Arts remained the same. The Senior thesis work involved the completion of a rotary transformer, a direct connected high-speed motor, and Mordy type alternator, and the armatures and commutators for a seven horse-power motor and a ten-kilowatt dynamo. These machines not only served as studies in design and construction, but as a necessary part of the equipment of the Electrical Laboratory. A tabulated view of the courses is as follows:—

<i>Subject.</i>	<i>Instructor.</i>	<i>No. In Class.</i>
Free-hand Drawing	Professor Anthony	21
Lettering	Professor Daniels	22
Elementary Mechanical Drawing .	Professor Anthony	23
Descriptive Geometry	Professor Anthony	23
Elementary Machine Drawing . .	Professor Anthony	16
Mechanism	Professor Anthony	22
Advanced Machine Drawing . . .	Mr. C. H. Chase	18
Machine Design	Professor Anthony	16
Advanced Machine Design and Thesis Drawing	Professor Anthony	6
Carpentry and Turning	Mr. C. H. Chase	20
Pattern and Moulding	Mr. C. H. Chase	17
Forging	{ Mr. C. H. Chase Mr. Moore	13
Vise and Machine Tools	Mr. C. H. Chase	13
Senior Thesis Work	Mr. C. H. Chase	7

The course in Steam, formerly given by Mr. Sanborn, was conducted by Professor Anthony, the class numbering twenty-five. The value of the course was much increased by the addition of an experimental slide valve engine which could be adjusted, operated, and tested by the class.

Under Assistant Professor Daniels, free-hand lettering was done by all engineers of the Freshman class, nominally during the first term, one period a week. Nineteen students did the work, which was continued somewhat into the second term to cover the course.

In Elementary Surveying, during the first term, nineteen Sophomores took the course, which consisted of the usual exercises with compass, level, and transit, with text-book work, problems, and plotting during the cold months. The subject was continued during the second term by ten students, six of whom were in the electrical course, and elected the work with a view to electing Topography as Juniors. The text-book work was finished, and some elementary topographical work was done.

Topography was regularly taken by nine Juniors in the civil course, and was elected by seven in the electrical course. Considerable triangulation was done, based on a carefully measured primary line, and some very good results reached. Text-book work and topographical drawing, with free-hand pen and with colors, were pursued during the cold months. Six Senior civil engineers worked on careful location of railroad curves during the early part of the first term, and in the latter part designed a large culvert to serve an area given by a topographical map.

Higher Surveying was one of the new elective courses given for the first time this year. It was elected by six Senior civil engineers. Hayford's Geodetic Astronomy was used, and the field operations included the use of transit with solar attachment, theodolite, and sextant, in determinations of time, latitude, and meridian. Many determinations of latitude were made, the mean result agreeing very well with the known value. More prominence was given the subject of Roofs and Bridges than heretofore by the offer of an elective course in Design for the second term. The matter of stresses is required to be taken by all Senior civil engineers in the first term. The usual analytical study of stresses was supplemented by a short course in Graphics, with a special application to analysis of a plate girder. Bridge Design was elected by five students. A steel roof truss and a highway bridge were the examples selected.

The following additions were made to the collection of instruments: by purchase, an excellent transit with full vertical circle and solar attachment, by Fauth and Company; a Wye Level by Queen and Company; two planimeters; by gift of Professor Wade, a sextant. About fifty blue prints were acquired, some by purchase, and some by gift, illustrating the best current practice in the use of steel in framed structures.

ELECTRICAL ENGINEERING.

The teaching work in the Department of Electrical Engineering is exhibited in the following table : —

<i>Classes.</i>	<i>Term.</i>	<i>Term Hours.</i>	<i>Instructors.</i>	<i>Description of Work.</i>
24 Sophomores	2d	3	Mr. H. G. Chase Prof. Hooper	Laboratory : Quantitative Experiments in Mechanics, Sound, Light, and Heat.
21 Juniors	1st	3	Mr. H. G. Chase	Recitations : Electricity and Magnetism.
21 Juniors	1st	2	Mr. H. G. Chase	Laboratory : Electrical Tests and Measurements.
18 Juniors	2d	2	Prof. Hooper Mr. H. G. Chase	Laboratory : Electrical Tests and Measurements.
15 Juniors	2d	2	Prof. Hooper	Calculations : Design of Dynamos ; winding-tables and diagrams for continuous current and polyphase armatures ; drop on network of conductors ; simple alternating current problems, etc.
18 Juniors	2d	3	Prof. Hooper	Recitations : Thompson's Dynamo Electric Machinery.
13 Seniors	1st	4	Prof. Hooper	Recitations : Fleming's Induction of Currents.
11 Seniors	1st	3	Prof. Hooper Prof. Anthony Mr. C. H. Chase	Laboratory : Advanced Measurements, Thesis Work, Construction of Electrical Machinery.
12 Seniors	2d	3	Prof. Hooper	Recitations : Bedell's Principles of the Transformer.
11 Seniors	2d	3	Prof. Hooper Prof. Anthony Mr. C. H. Chase	Laboratory : Thesis Work ; Construction of Electrical Machinery.
12 Seniors	2d	3	Prof. Hooper	Electrical Topics : Lectures by Students on selected subjects.

The department has as usual furnished the Library and Goddard Chapel with light during the year. This very considerable burden is now, however, happily removed.

During the early spring the students, working under the direction of Professor Hooper, installed one hundred and three incandescent lamps in the Chapel in place of the arcs formerly used ; and during the summer Professor Hooper connected both the Chapel and the Library by underground conductors with a transformer on one of the poles of the Somerville Electric Light Company. The cost of the material used in this work was nearly four hundred dollars. Of this amount Professor Whittemore several years ago collected eighty-five dollars, and Doctor Leonard has now nearly completed the raising of the balance.

During the year the department has received as gifts from the General Electric Company, an ammeter, six condemned transformers, and several smaller articles of use to the College. The motor-driven high frequency alternator, the rotary converter, and the five horse-power induction motor referred to in a former report have been completed and put into operation. Several new pieces of work have been undertaken, and among them the armatures of a ten-kilowatt generator and a five horse-power motor have been completed.

PHYSICS.

The following work was done during the year. The program as given in the College Catalogue was carried out.

1. Physics I consisted of ninety-eight students at the beginning and eighty-four at the end of the session. Of these, five failed to pass the examinations. The course continues through the year three times a week.

2. Astronomy. Seventeen students elected this study, and completed the course, which lasted the first half of the year ; two periods a week.

3. Physics 6. Philosophical Physics. Twenty-one students took this one term subject, and eighteen completed it in a creditable manner.

4. Physics 7. Spencer's First Principles. Twenty-three students elected this second term subject.

5. In addition, a course of lectures during the second half-year was given to the Senior electrical engineers, on Electrical Apparatus and Industries, the lectures generally twice a week, and

6. A course of lectures on the Acoustics of Music, Music 7, was also given to a class of eight students, the last term, one lecture a week.

CHEMISTRY.

The advanced courses in Inorganic and Organic Chemistry, in charge of Professor Michael, were attended by six students.

Dr. Hartman had charge of the Quantitative Laboratory, and six students elected work on this subject. There were also two students who took a course in Gas Analysis under his direction. Dr. Leighton gave a course on Organic Chemistry, and on Determinative Mineralogy, and these subjects were elected by eleven and eight students respectively. In the Organic and Quantitative Laboratories four students took Course 14, and six Course 15.

The following researches were completed during the past year (several of which have already appeared in print):—

1. A. Michael: The Hydration of Symmetrical Dialkylacetylenes.
2. A. Michael: On the Behavior of Benzoic Aldehyde towards Phenol.
3. A. Michael and R. N. Hartman: On the Constitution of Hexylalcohol from Hexylene.
4. A. Michael and R. N. Hartman: On the Relative Ease of Anhydride-Formation with dibasic, Fatty Acids.
5. A. Michael and V. L. Leighton: On the Constitution of Propylenechlorhydrine from Propylene and Hypochlorous Acid.
6. A. Michael and V. L. Leighton: On the Constitution of Propylenechlorhydrine from Propyleneglycol and Chlorhydric Acid.
7. A. Michael and V. L. Leighton: On the Dehydration of Propyleneglycol.

The first of a series of memoirs, embodying the experimental results of the investigations in Organic Chemistry which have been carried on in the laboratory during the

past four years, has been published in the *Journal fuer praktische Chemie*, Vol. 60, pp. 286-460, and it is expected that a second monograph will be ready for publication during the course of the year. It is believed that these researches will exert a modifying influence on the theoretical views now held in Organic Chemistry.

Chemistry 1, General Inorganic Chemistry, in charge of Professor Durkee, was given throughout the year to thirty-one students. There were three hours a week of laboratory work and one and one-half hours of lectures. The recitation work has been carried on in the laboratory and with the students individually. For laboratory work the students have been divided into three divisions, but all came together for lectures. As a text-book, Remsen's advanced work on Inorganic Chemistry has been used, and for the laboratory work, Durkee's Laboratory Manual.

Chemistry 2, Qualitative Analysis, was given the first term, six hours a week, to twenty-nine students, of which two were women. Since it was not possible to find hours, the class could not be divided, and on account of numbers was unwieldy for laboratory work. Consequently, the instructor was not able to accomplish as much with this class as with the smaller ones which have come to him in other years. With the exception of six lectures, the work was in the laboratory. A. A. Noyes's text-book on Qualitative Analysis has been used and Durkee's Laboratory Notes.

Chemistry 3, an advanced course of Qualitative Analysis, was given the second term, six hours a week, to six students. Chemistry 2 was also given to one student, who could not get the subject the first term. The methods of instruction in this course are in the main those described in the paragraph on Chemistry 2.

Chemistry 8, Metallurgy of Iron, was given the second term, two hours a week, to ten students. This is a lecture

course. Bauerman's Metallurgy of Iron was used as a text-book in connection with the lectures.

Chemistry 7, Fire Assay, was given by Mr. Whitehorne with entire satisfaction to eight students, four hours a week, the second term. This is purely a laboratory course.

During the first term Mr. Whitehorne attended to the solutions used in Qualitative Analysis. Mr. Murphy attended to the apparatus and solutions used by the men in Quantitative Analysis and Organic Chemistry.

BIOLOGY.

The courses in Biology were the same as in the previous year. The attendance was as follows:—

		<i>No. Registered.</i>	<i>No. Receiving Credit.</i>
<i>Biology</i>	1.—General Biology	23	16
"	2.—Invertebrate Zoölogy . .	17	11
"	3.—Vertebrate Zoölogy . . .	6	3
"	4.—Physiology	8	8
"	5 and 6.—Histology and Embryology	6	5
"	8.—Advanced Work	7	7

There was also conducted a half-year course in scientific German, reading Wiedersheim's *Des Bau der Menschen*. This was taken by ten students, of whom six completed the course in a satisfactory manner.

During the second term a course was conducted in Elementary Geology, which was taken by six students, all of whom received credit for the work.

In the laboratory work of Biology, Professor Kingsley was assisted by Miss Bertha F. Lawrence, and in Biology 2 by Mr. Geo. F. Morton, both of the Senior class. Both performed their duties in a satisfactory manner.

Three graduate students began work in the department, but before mid-year Mr. S. P. Capen resigned in order to take up work at Harvard. Mr. Harrison S. Allen continued work through the year, and at Commencement,

having passed a satisfactory examination and having presented a dissertation upon the chondrocranium and proatlas of the alligator, was awarded the degree of A.M.

Dr. W. H. Ruddick continued his studies upon the ear, and in connection with J. S. Kingsley published a preliminary paper on the subject, to be referred to again below.

The equipment of the department has been somewhat increased, partly through the laboratory fees and partly by means of a special appropriation. By means of this we were able to purchase nine microscopes, an incubator, and several minor bits of apparatus.

The department library has shown a gratifying increase during the year, the additions amounting to one hundred and fourteen volumes and four hundred and twelve pamphlets and parts of volumes. A considerable number of periodicals have been bound, and at the date of this report the library contains eleven hundred and eight volumes and twenty-nine hundred and eighty-three pamphlets and parts. Of the additions, one hundred and eighty-one were acquired by purchase, one hundred and ninety by exchange. The others were the gift of J. S. Kingsley, Dr. W. H. Ruddick, the Essex Institute, Professor Marshall, Ch. Janet, J. W. Spengel, G. M. Winslow, and W. R. Shaw.

On account of the large amount of work which has devolved upon Professor Kingsley during the past year, and especially the time required in the preparation of his book on Vertebrate Zoölogy, which has just been published, less attention has been paid to original investigation than in some previous years. Only three papers have been published as coming from the Biological Laboratory. One of these, by Dr. Ruddick and Professor Kingsley, deals with the homologies of the bones of the ear in mammals and their bearing upon the ancestry of the group. Two other papers by Professor Kingsley are keys to the North American species of certain groups of Crustacea and form

two numbers of the series of keys now in course of publication in the *American Naturalist*.

No number of the *Tufts College Studies* has been issued since the last report, but there is matter in hand, or which will be ready soon, sufficient to make a good-sized number. Among other matter reference might be made to the dissertation of Mr. Allen, mentioned above, the final article on the ear bones of the mammalia, and an article upon amphibian monsters which Dr. Winslow had nearly completed at the time he left us, and which will soon be ready for the press.

The laboratory fees have been sufficient to keep the stock of supplies in good condition. An appropriation was made from this fund toward paying the expenses of Dr. Lambert, who spent the entire summer at Harpswell, Maine, collecting chiefly for laboratory purposes. He brought back with him large supplies of material for class-room use, as well as many specimens for the general collection.

The appointments for the coming year are as follows: Dr. F. D. Lambert, Instructor in Biology. Dr. Lambert will assist in the conduct of Biology I and will also give courses in Botany. He is a man of boundless energy, enthusiastic, and an admirable teacher. To the fellowships in Biology the appointments are Mr. Harrison S. Allen, A.B. of Colby, A.M. of Tufts, and Mr. George F. Morton, S.B. of Tufts.

The department repeats the wish of the last report: that in some way means may be found to establish a biological station on the shores of Casco Bay. Such a station would be of great value, not only to the College, but to science, since there is not a single station on our shores north of Cape Cod, a promontory which sharply marks off a northern fauna from that of the warmer seas.

MODERN LANGUAGES.

The work of the Department of Modern Languages for the year ending June, 1899, did not differ materially, except in the Engineering Department, from that of the years immediately preceding, as will appear from the appended tabular statement.

The vacancy in the teaching force caused by the resignation of Dr. Fluegel was acceptably filled by the appointment of Mr. L. J. Demeter as instructor. In addition, however, to the German courses, Mr. Demeter gave assistance also in the courses in French, and for the first time a class in this language corresponding to German 3*b* (composition and conversation) could be formed.

Again we have had large classes in the more advanced German and French courses, at least in 4 and 5, which formerly were comparatively limited. And again it is a noticeable fact that these classes invite more women than men, only a few of the latter, and these in general from among the more scholarly, being registered in these courses.

A subject for special congratulation for the department is the result of the recent effort to increase the efficiency of the College Library as an aid in class work. In addition to the department's share in the appropriation made by the Trustees, special donations in sums of from fifty dollars to two hundred dollars have been secured, which have become available for the immediate purchase of books. This sum, four hundred dollars, has been about equally divided between works bearing upon French and German literature. In the former the acquisitions are mainly in the field of criticism. A notable acquisition for the German department comes to us through the generosity of Mr. J. D. Perkins, of Brooklyn, N. Y., which has enabled us to purchase a full set of *Kürschner's Deutsche National Literatur*, in two hundred and twenty-five volumes. These ad-

ditions to our resources, with the prospect of constant gains in the future, are full of promise for the quality of the work to be done in our more advanced courses.

Under Mr. Earle, as a part of the general changes in the program of the Engineering Department, the term of French or German heretofore required of Juniors has been dropped, and the student is now offered elective subjects in Modern Languages in his Junior and Senior years. This change has proved a decided advantage. This year, for the first time, engineers have been entirely separated from the students of the College of Letters in all required work in French—a much-needed separation, considering (1) that while two, three, or even four languages are offered at entrance by the candidates for A.B., the candidate for S.B. in Engineering enters with but one or even no language; (2) that his interests are special; and (3) that he must do much in little time, not only because the knowledge gained is to be of practical value to him, but because in this knowledge lies a large share of his hope of breadth of education. Three subjects have been given this year:—

French 110, for those who enter without French or German.

French 111, regularly required of all Freshmen who enter with French.

French 112, required of all Sophomores who have completed 111.

These three courses form an organic whole, and are conducted according to a plan carefully formed to suit the limitations, the interests, and the needs of the engineer.

The students who enter with German, or who, for any special reason, elect this subject, still enter the College of Letters.

Besides the advanced subjects in French and German which the engineer may elect with the students of the College of Letters in his Junior and Senior year, a subject

in Spanish was given this year as an experiment. Owing to the fact that the class was not organized till two weeks after the beginning of the term, and was not duly arranged for in the program, only four students elected it, and for half the year it could be given but two hours a week.

<i>Courses.</i>	<i>Instructors.</i>	<i>No. in Class.</i>	<i>Work Done.</i>
German 1	Prof. Fay	36	Joynes-Meissner Grammar, Parts I. and II. Auf der Sonnenseite; Der zerbrochene Krug; Eingeschneit.
German 2	Mr. Demeter	37	Bernhardt's German Composition. Der Schwiegersohn; Die Freiherren von Gemperlein; Tales from Hauff; Aus dem Jahrhundert des grossen Krieges.
German 3	Mr. Demeter	26	Zwischen den Schlachten; Die Journalisten; Karl der Grosse; Minna von Barnhelm; Hermann und Dorothea; Günstige Vorzeichen.
German 3 ^b (In 2 divisions 2d half-year)	Mr. Demeter	20	Stein's German Exercises; Buchheim's Prose Composition; Joynes-Meissner Grammar, Part III.
German 4	Prof. Fay	31	Wallenstein; Maria Stuart; Gustav Adolf in Deutschland; Der Geisterseher; Egmont; Die italienische Reise.
German 5	Prof. Fay	10	Nathan der Weise; Emilia Galotti; Laocoön; Tasso; Iphigenie auf Tauris.
German 6	Prof. Fay	2	Vilmar, Geschichte der deutschen Literatur; Der Cid; Der Messias; Die Abderiten; a study of the Romantic School, with selections from Muller's German Classics and Kurz's Literaturgeschichte.
Italian	Prof. Fay	14	Grandgent's Grammar and Composition; Bowen's Reader; Maffei, Merope; Dante, Inferno and selections from Purgatorio.
French 1	Prof. Lewis	14	Edgren's Grammar. Rollins's Reader; Mêle-toi de ton Métier; Le Chien du Capitaine; La Main Malheureuse.

French 2	Prof. Lewis	37	Macmillan's French Course (second year). About, Le Roi des Montagnes; Sarcey, Le Siècle de Paris.
French 3	Prof. Lewis	52	La Guerre de l'Indépendance en Amérique; Super's Readings from French History; Mithridate; Polyencte; Britannicus; Le Lutrin; Andromaque; L'Avare. Chardenal's Advanced Course.
French 4	Prof. Fay.	24	Crane's Société française au XVIIe Siècle; Syms's Selected Letters of Mme. de Sévigné; Bernardin's Morceaux choisis des classiques français du XVIIe Siècle; Rostand's Cyrano de Bergerac; Les Précieuses Ridicules; Les Femmes Savantes; Le Misanthrope; Andromaque; Le Cid.
French 5	Prof. Fay and Prof. Lewis.	16	Crane's Le Romantisme Français, with collateral reading on the Romantic Movement. Pailleron's Le Monde où l'on s'ennuie; Causeries de Sainte-Beuve (G.N.Harper); Tales of Coppée and Maupassant (Cameron); Mellé's Lemaître; Van Daell's Bourget; Leune's Difficult Modern French, Ploetz's Nouvelle Grammaire Française, used for review and reference.
French 4b	Mr. Demeter.	7	Fasnacht's First Course in Composition; Ploetz, Cours Gradué et Méthodique de Thèmes Français, Nouvelle Grammaire Française; Daudet, Morceaux Choisis.
ENGINEERS. French 110	Mr. Earle.	4	Grandgent's French Grammar and College Exercises. Super's Reader; Le Conscriit de 1813.
French 111	Mr. Earle.	16	Grandgent's Grammar. La Guerre de l'Indépendance en Amérique; Le Chien du Capitaine; Les Trois Mousquetaires; Davies's Elementary Scientific Reader.
French 112	Mr. Earle.	12	Cinq-Mars; Le Monde où l'on s'ennuie; Le Roi des Montagnes; Cyrano de Bergerac; Quatrevingt-treize; Colomba; L'Année Scientifique et Industrielle.
Spanish	Mr. Earle.	4	Edgren's Spanish Grammar. Matzke's Reader; Gil Blas.

ENGLISH.

A detailed statement of the year's work in English, which now includes what has heretofore been the separate department of English Literature, is given below by Professor Shipman, who conducted the four classes immediately following :—

English 1.—First term, 72 ; second term, 55.

“ 1*b.*—Second term, 11.

“ 5.—First term, 9.

“ 6.—First term, 17 ; second term, 5.

The work of the department has gone on very much as before consolidation. It is now somewhat easier for the student to make up the required program for a major subject, and there seems to be already a growing disposition to make use of the new opportunities. In addition to the teaching force set down for English in the Catalogue, two advanced students have been employed as assistants during the entire year, who together have given more than twenty hours a week to the work of reading and revision. By this means it has been found possible for Professor Shipman and Assistant Professor Whittemore to hold frequent consultations with nearly all students in composition — with all students hereafter, the department hopes to be able to say. In the absence of Professor Shipman for a year, Mr. Whittemore will have supervision of all required Composition, and with an approved graduate assistant will conduct the work on the lines that have been laid out. The present condition of the English Department is decidedly better than at the time of any previous report.

In English 2 there were seventy-two students, meeting in class three hours a week during the first term, and one hour during the second. Fortnightly conferences were also held with each student after mid-year.

In English 3 there were nine students, and in English 4

seven, meeting the instructor during the first term in class and individually once a week.

In English 13 the instructor gave two lectures a week during the second term to thirty students.

In English 18 there were nineteen students, meeting three hours a week during the second term. Julius Cæsar, Macbeth, Hamlet, King Lear, Anthony and Cleopatra, and The Tempest were read.

In English 23 there were during the second term six students, meeting once a week in class and conference.

The subjects given by Mr. Earle were, as heretofore, Elementary Anglo-Saxon, to five students, three hours for the year. An additional course in Historical English Grammar, to three students, by lectures, one hour for the year, was also given. The remainder of the work is scheduled below.

<i>Name of Subject.</i>	<i>Hours a Week.</i>	<i>Instructors.</i>	<i>No. in Class.</i>	<i>Work Done.</i>
English 11.	1	Mr. Earle. Prof. Wade. Dr. Knight. Prof. Maulsby.	59*	Mr. Earle, three lectures; Professor Wade, two lectures; Dr. Knight, two lectures; Professor Maulsby, twenty-four lectures. Required reading, about 1,200 pages. Examinations.
English 12.	3	Prof. Maulsby.	36	Lectures setting forth the development of American literature, with extended consideration of the leading authors. Examinations. Occasional writing of lines from memory. Required reading, between 2,500 and 3,000 pages. Two essays of about 3,000 words each.
English 14.	3†	Prof. Maulsby.	29	Victorian poets. Lectures on Matthew Arnold, Swinburne, Mrs. Browning, A. H. Clough, D. G. Rossetti, William Morris, Austin Dobson, Alfred Austin, Kipling. About one-third of the time was devoted to Tennyson. Reading, about 1,300 pages. Examinations. Essay.

* Including 18 engineers.

† For second term.

English 17.	3*	Prof. Maulsby.	22	Reading, with special reference to Shakespeare's language, of Midsummer Night's Dream, Romeo and Juliet, Othello. Examinations. A final essay was required, involving examination of a considerable portion of the text of plays, usually those not read in the class.
English 25.	1	Prof. Maulsby.	2	The development of the English lyric. The first half-year was spent largely upon the ballad, Child's edition, through the kindness of Mr. Whittemore, being at hand for reference. The second half-year brought the lyric through the Elizabethan period to modern times. The method used was the method of weekly reports and class discussion.

*For first term.

For the past two years interest has been manifested by certain instructors and students in that branch of the work of the American Dialect Society which looks toward the publication of a dictionary of Americanisms. The works of Cotton Mather have been assigned to Tufts College. Mr. Earle has compiled a bibliography of five hundred and six titles, and five persons have co-operated in the discovery of two hundred and thirty-three words not recognized by the current dictionaries.

ORATORY.

In the Department of Oratory under Professor Maulsby fourteen students elected the elementary work in the subject, which consisted, as usual, of class exercises in breathing, tone-production, articulation, and the elements of gesture, together with a consideration of the fundamental qualities of all good public speaking, and the presentation of nine spoken selections. Besides those electing

the subject from the College of Letters, five students from the Divinity School took the work during the first term, as a part of the requirement of their course.

The work in Oratory 2 consisted in reading in class the principal scenes from *The Merchant of Venice*, and in a rapid reading of Browning's *Strafford*, besides individual speaking, and the public presentation of the trial scene from *The Merchant of Venice*. This presentation was given on the evening of April 18, before a good audience in Goddard Chapel, when also members of Oratory 1 contributed selections of prose and poetry.

Oratory 4, to continue report of those studying the drama, read scenes from *As You Like It*, presenting one of these scenes in public in connection with readings by members of Oratory 1. In the second term, in conjunction with the presentation of a French play by students directed by Professor Lewis, three members of Oratory 4, assisted by Mr. S. P. Capen, gave publicly, in Somerville, the one-act German comedy, *Günstige Vorzeichen*. In rehearsing the pronunciation of this play, Mr. Ludwig Demeter was of great assistance.

In Oratory 3, four students read the introductory essay on Oratory in Ringwalt's *Modern American Oratory*, and analyzed the structure of two orations in that book, thus leading up to the making of original plans and the preparation and delivery of an original speech.

Oratory 5 began with consideration of those respects in which debate differs from forensic oratory. The class prepared and publicly delivered two debates on current questions. A challenge was sent to one of the local societies to debate on a third question, and the class was prepared to debate it, when, at the motion of representatives of the society, the debate was indefinitely postponed. The usual prize readings were held on the afternoon of May 19.

MUSIC.

In the department of Music the subjects numbered 1, 2, 4, 5, and 6 in the catalogue were given.

Music 1. Harmony was taken by seven students. The text-book was G. W. Chadwick's new treatise. The excellent combination of standard and novel methods of presentation therein contained made the instructor's work light, and gave the class a distinct advantage over earlier classes. Much attention was given to the harmonic analysis of compositions of classical and modern masters.

The course in Counterpoint, Music 2, was taken by three students. The instructor believes in the wisdom of restricting this course to those specially gifted in music. Lectures, practical exercises in Composition, and extended and careful analysis, contrapuntal and thematic, of specimens of Bach and other masters, made the subject-matter of the course.

The work of Music 4, History of Music, was carried on by lectures and theses, as hitherto. The class numbered ten. The period from the death of Palestrina to the present day received special attention, but the influence of mediæval and oriental music upon modern music was also traced.

Advanced individual work in Music 5 was done by one Junior. The subject chosen was "The Growth of the Reputation of John Sebastian Bach Since the Mendelssohn Revival of the Passion Music in 1829." Our excellent musical library furnished nearly all the material for a whole year's study of this subject. The libraries of Boston and of Harvard University were used only for certain early periodicals not in our collection.

The course in Acoustics, Music 6, was given by Professor Dolbear, and a report is given with the work of the Department of Physics.

THE FINE ARTS.

This department was in charge of Mr. Whittemore. Fine Arts I was elected by twenty-four students. The class met twice a week during the second term, and the instructor lectured on the history of Greek Art, with an introduction on the arts of Egypt, Assyria, and Phœnicia.

HISTORY.

The work of the department during the past year was conducted mainly upon certain well-established lines, but one new departure requiring special mention. History 2, not hitherto given, was opened as a full-year subject, and conducted as a course for individual work. Each student taking the subject worked independently, confining his study to a comparatively limited field, giving attention to the bibliography of that field, using the resources of the different accessible libraries, making copious notes and outlines, and conferring with the instructor once a week. The method has proved its value for a limited class. The fields studied during the year were the Renaissance, by one student; the French Revolution, by three; the Napoleonic Period, by three; and the Nineteenth Century, by one. Excellent work was done by some, although the method was new to them, and their efforts were somewhat experimental.

The department still needs much in the way of equipment, but the lack was not so serious as in previous years. The historical section of the Library is approaching a working basis, and perhaps the most pressing need at this time is an adequate set of wall-maps.

The registration in the several subjects given was as follows:—

<i>Course.</i>	<i>Total.</i>	<i>Completed.</i>	<i>Received Credit.</i>
<i>History 1</i>	41	37	32
" <i>2</i>	18	8	6
" <i>4</i>	9	9	9
" <i>5</i>	7	7	6

PHILOSOPHY.

The following table shows the number of courses offered and the number of students registering in each course:—

<i>Course.</i>	<i>Instructor.</i>	<i>Registered.</i>
<i>Philosophy</i> 1.—(History of Philosophy).	Dr. Cushman	60
" 2.—(Psychology).	Dr. Cushman	41
" 3.—(Logic).	Professor Shipman	8
" 4.—(Logic, Advanced). . .	Professor Shipman	5
" 5.—(Ethics).	Dr. Cushman	8
" 6.—(Ethics, Practical). . .	Professor Tousey	8
" 7.—(Philosophy of Religion).	Professor Knight	2
" 8.—(Metaphysics).	Dr. Cushman	6
" 10.—(English Philosophy). .	Dr. Cushman	8
" 12.—(Pedagogics).	Dr. Painter	10
" 13.—(History of Ethics). . .	Dr. Painter	10
Total		166

The table shows a large increase over previous years in the number of students taking Philosophy. It must be added that one-fourth of those who registered in Philosophy 1 and 2 failed to receive credit, of whom so large a proportion were first-year students that the department has decided to offer its courses only to students who have been at least one year in College.

The advanced courses have, as heretofore, been attended for the most part by students of high scholarship. The two half-courses offered this year by special arrangement with Dr. Painter were highly appreciated by the students. Besides supplementing the work of the department, they have afforded a hint of the benefit that the College would derive from regular instruction in Pedagogy.

The addresses before the Philosophical Conference by prominent educators on pedagogical subjects were well attended, and were not only heard with interest, but stimulated profitable discussion. The addresses were given by Mr. Collar, of the Roxbury High School, on "How To

Teach Latin in a Secondary School;" Mr. Byron Groce, of the Boston Latin School, on "How To Teach English in a Secondary School;" Mr. Walter Beckwith, of the Salem Normal School, on "The Discipline of a Secondary School."

Professor Shipman notes with great satisfaction the well-earned advancement of Dr. Cushman to a full professorship, who becomes thereby the head of our late established but promising department of Philosophy.

POLITICAL SCIENCE.

Up to the end of the present year the President has had charge of the various courses of Political Science. Political Science 1 is a lecture course given three times a week for the full year. Marshall's Principles of Economics was the basis of the work, and the class was held to an examination upon that. Other works were referred to, and theses were required of the students on vital topics. The class during the first term consisted of seventy-three students, made up of students from the College of Letters, who elected the subject, and students from the Engineering Department and the Divinity School, who took it by requirement. The latter portion of the class left at the mid-year. The number who continued to the end of the year was about forty.

Political Science 2 was taken by fifteen students during the first term. Maine's Ancient Law was used as a textbook through a greater part of the term; but during a few weeks at the close of the term a brief course of lectures was given on the Constitution of the United States. This course was followed in the second term by Political Science 3, a course which deals with the subject of International Law, and was taken by twenty-one students. On account of the peculiar international relations of our own and other countries, which presented many practical problems

to be solved in the light of historic precedent, the course evoked a great deal of interest.

Instruction was given in Political Science 5 to three students by Assistant Professor Start. The subjects embraced in this course were general political science and comparative constitutional law.

In addition to the foregoing, one student in Political Science 6 took an advanced course of research in a branch of Massachusetts Colonial history.

It is gratifying to know that this department has been greatly strengthened by the creation of the Cornelia S. Jackson Professorship of Political Science. Henry C. Metcalf, Ph.D., has been appointed to this professorship. Dr. Metcalf is a man of ample training and high repute. His appointment cannot but be regarded as an important addition to the teaching force of the College. It is to be welcomed also because it will relieve the President from a considerable amount of teaching and so enable him to give more attention to the constantly growing duties of administration.

COLLEGE PULPIT.

The College Pulpit, as usual, has been in charge of the President. Not much can be said in addition to what has been said many times before. The interest in Sunday services continues to be very unsatisfactory. Many students, to be sure, go to their homes on Sunday; many, also, choose to worship with other congregations in Boston or in the adjoining cities of Somerville and Medford. Still, the interest of those who remain is not what it should be, and there is not much prospect of a revival of interest in it unless something can be done to render the services more attractive. It is the purpose during the coming year to take measures to enrich the order of worship and make an effort to enlist the co-operation of the students. The music will be improved by adding a large choir of student

voices, both male and mixed. It is hoped that this and other devices may have a tendency to lead a greater number of students to attend divine worship in Goddard Chapel.

The reports of the professional schools and other departments of instruction are appended herewith.

ELMER H. CAPEN.

TUFTS COLLEGE,

September 20, 1899.

THE LIBRARY.

REPORT OF THE LIBRARIAN.

To the President:—

I herewith submit the report of the Library for the year 1898-99:

Accessions from September 1, 1898, to September 1, 1899.

	<i>Vols.</i>	<i>Pams.</i>	<i>Nos.</i>
Total	1,425	1,377	1,364
Purchased	140		1,083
Donations	1,123	1,377	281
Binding	161		
Exchange	1		
Yearly average of accessions for five years . . .	1,472		
Circulation for home use	5,854		
“ among Professors	943		
“ “ Students	4,911		

<i>Character of circulation</i>	<i>per cent.</i>
I. English prose fiction	9.48
II. History and biography	12.86
III. Poetry, drama, and literature	29.55
IV. Arts and sciences	11.69
V. Theology and philosophy	5.45
VI. Law, politics, political economy, and sociology . .	2.50
VII. French, German, Greek, and Roman Literature . .	5.77
VIII. Philology	1.98
IX. Geography, education, and miscellaneous	3.40
X. Periodicals and pamphlets	17.32

Though the number of volumes added during the year is slightly below the average for the past five years, the practical value of the books added is much above that of any previous year for a long time.

At Mr. Joy's death, the income of the Joy Fund was diverted to other uses of the College. Because of this

change and of the pressing need of books in all departments, Professor Shipman wrote to a few friends among the Alumni and others and succeeded in collecting about fifteen hundred dollars. This money was divided among the different departments, and the greater part of it spent during the year. The rest will be expended and accredited in next year's report. In this way were received from

	<i>Vols.</i>
James D. Perkins, German Classics	220
C. J. McKenzie, books in modern languages	56
Walter E. Parker " " engineering and physics	27
J. G. Ray, 2d. " " political science	7
Mrs. S. A. Mower " " Greek and Latin	30
Byron Groce, Anglo-Saxon and early English	11
C. W. Parmenter, books in philosophy and physics	33
Alumni not specified	36
Other friends	158
Total purchased with Shipman subscription	578

Besides collecting this subscription Professor Shipman gave from his own library twenty-eight volumes and sold to the Library many others at a very low price. They were mostly on philosophical subjects. Total gifts from Alumni, one hundred and sixty-nine volumes; from President Capen, twenty-nine volumes; from Mr. Edwin Ginn, four volumes. The others accredited above. From Dr. W. H. Ruddick were received one hundred and forty-six volumes; all but fourteen volumes of them were sent to the Medical School. The class of 1900, instead of publishing an Annual, voted to buy works on art for the College Library, and forty-eight volumes have been received thus far.

Besides the German Classics of two hundred and twenty volumes received, I would mention the Dictionary of National Biography, fifty-nine volumes, and the Jesuit Relations, fifty-two volumes,—all that have been issued in the sets.

One thing noticeable about the circulation was the lower per cent of fiction and the great gain in poetry, drama, and general literature.

Quite a deal of binding was done during the summer. The magazines and other periodicals were bound up to July, and many books repaired and rebound. Altogether, the past year has been a profitable one for the Library, and it is to be hoped that the interest aroused in its welfare will continue to be shown in the same substantial manner.

I would call attention to the crowded condition of the Library, and suggest that some place be assigned to the young women for a study, since the Library is used by them to some extent for that purpose, thus interfering with the general research work and reading which has to be done for the different classes. The additional bookcases put in during the summer will make it more crowded than ever if some relief is not given.

The Librarian and Assistant Librarian were kept busy, especially the latter part of the year, after the Alumni books began to come in ; but everything has been catalogued, though the books are not all assigned to permanent places, because of possible changes in the near future.

Respectfully,

HELEN L. MELLEN,

Librarian.

TUFTS COLLEGE,

September 20, 1899.

THE DIVINITY SCHOOL.

REPORT OF THE DIVINITY SCHOOL.

To the President:—

The whole number of students connected with the School during the year was nineteen — a relatively small number, but not discouragingly small in view of the School's endeavor to give to the church a ministry rich in intellectual gifts and attainments as well as in religious motive and devotion. During the three years past many applicants for the divinity course have been induced to take the full course in College preparatory to professional studies; or, when not able to take the full course in College, to take the most complete preparatory course possible — a course ampler than the one required for entrance upon the A. B. course. The action of the Divinity School in these respects must be commended by all persons who see that the hope of the church is in an educated ministry; and it is noteworthy that the School is sustained in its efforts to maintain a high standard for its work by its own graduates. In this connection this report ought to acknowledge the practical support which the School has received from the clergy who have been made acquainted with the School's plans and purposes. It is right to say, also, that the courses of study which the Divinity School offers have gained the intelligent interest of Christian scholars of different names, and that they include those subjects which ought to attract trained men and earnest students. Moreover, the School has not been unmindful of the plea that the A. B. course, or its equivalent, should be taken as preparatory to special theological studies. At the present time the A. B. course is required of those who enter this School to be candidates

for the degree of Bachelor of Divinity. Of other candidates for the same degree who have passed the prescribed examination, an extra year is required — a larger requirement, it is believed, than is made by any other theological school in the country, except Princeton ; and to any who think these requirements too severe, and that we want not the dry processes of study but religious and philanthropic enthusiasm, we have to say that the intellectual treatment of religion is a necessity for the highest spiritual influence ; and, more and more, the highest order of mind in the congregations asks that the finest inspirations and the warmest zeal may be controlled by trained faculty and exact knowledge. It is conceded that the distinctive vocation of the minister is to preach, and that his great aim should be to elevate character, and bring souls into right relations with God. Of course he ought to be caught up into communion with God ; but blessed is that minister who can look calmly upon the mental conflict of our day, and by the solidity of his thought and the safety of his knowledge teach it to see the wider truth and the ampler life, and so be able to guard against a traditional credulity on the one hand and a critical frivolity on the other. How successful the School has been in helping men to a balanced, cautious, sober faculty in dealing with the highest subjects of human thought must be told by those who have known the full measure and meaning of its work.

A few points of suggestion as to the work of the Divinity School may not be out of place :—

1. In the first place, it ought to be said that theology as taught in this School does not mean a mere theoretic basis for the activities of the religious life. It includes a human and historic interest. The larger part, indeed, of the School's teaching bears upon the personal life and the structure and purpose of society, and, as a consequence, upon the highest form of human welfare. The School is

especially interested in the concrete facts of history, and the problems of the social organism. All of the time the thought of God, and of his relation to nature and man, are kept in mind, and so every immediate pursuit, whether historical, philological, exegetical, philosophical, practical, is made a part of one great whole.

2. And then this School recognizes the scientific demand to such an extent that forms of faith remote from the one the School stands for are open to sympathetic study. As is well known, the School is pledged to a distinct form of the Christian faith; viz., a belief in a government of the world that is moral, and one that must necessarily result in spiritual perfection to all the children of the Heavenly Father; but this belief is not assumed at starting. The student is invited to a comprehensive study of different forms of Christian faith, and of non-Christian faiths, and helped to abide in the richest and highest type of doctrinal conclusion.

3. The largest share of the School's attention is given to an efficient practical ministry for a particular church; and so it devotes itself to that freedom of faith and breadth of thought which the Universalist Church loyally recognizes. The School's motto is fealty to the truth, which urges liberty in its pursuit and utterance. So far as the study of theology is concerned, the Divinity School is as free as any scientific academy or secular institute, and yet, for its own ends, the large purposes for which the School exists, it seeks to draw students together in intellectual, moral, and ecclesiastical sympathy.

The previous reports of the Divinity School have said nothing of the work of distinct departments. The writer of the present report, therefore, after thirty years of strenuous care in the School, and constant inspection of its work, may be allowed to say that, in the great essentials of in-

struction, and in all the subjects of a wide curriculum, the teaching in the School is most conscientious and thorough. The one man who, after the present Dean, has been longest in the School is an authority in the subjects which he discusses, and a master in the teacher's art. This is the grateful testimony of all students who have known the keen and illuminative intelligence of his class-room, and the new motive, also, supplied by his noble treatment of Theism and Theological Ethics. Historical and systematic Theology receive, it is conceded by all who have known the care and inspiration of his teaching, the most consistent, safe, and catholic treatment from the professor who has these subjects in charge. New Testament studies are in the hands of an enthusiastic student of Biblical subjects, who is recognized as a cautious and original writer on exegesis, and whose work in the School is more and more appreciated by students who see that the words of Holy Scripture are to be made not only clear, but tremulous once more with spiritual meaning. Work of the widest import is suggested by the phrase "applied Christianity," and the School is to be congratulated that the great subject of Christian Economics has fallen to a modest and painstaking scholar, who is not led away into any abstract and *a priori* treatment of his subjects. The School owes much to the teachers in the College of Letters, and to none more than to the Professor of Oratory and to the President of the College, to whom we are indebted for timely instruction in Political Economy.

The thanks of the Faculty and students are due to the Non-Resident Lecturers for the year,—Edwin C. Bolles, D.D., Henry W. Rugg, D.D., William H. Dearborn, B.D., and Frank O. Hall, B.D. The lectures of these men admirably supplemented the various work of the School.

At every step of this report one man has been in mind,

as if we were speaking of him and for him,—the venerable and venerated Doctor Thomas Jefferson Sawyer, the first Dean of the Divinity School, and always, even to the last, and never more than at the last, its helper and solicitous friend. It seems meet that the closing years of his active career should be given to the work of formal instruction in a representative school of theology, and that the signal influence of his maturest days should be in behalf of young men preparing for the Christian ministry. It both exalts and comforts us that the one petition in the centre of his last prayer was for the Divinity School, and for the growing ministry of the church he loved.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 20, 1899.

THE MEDICAL SCHOOL.

REPORT OF THE MEDICAL SCHOOL.

To the President:—

I have the honor to submit to you herewith the report of the Medical School for the year 1898-99. The year has been a period of uninterrupted prosperity, and the School has enlarged its facilities in all directions, expanding in a manner which I believe to be without precedent in the history of American medical schools. This advance is largely to be attributed to a devoted, conscientious, and harmonious Faculty, and I desire to take this occasion to thank the various members of the board of instruction for their disinterested labors and cordial support.

The number of students enrolled during the past year is the largest in the history of the School. Of this number fifty are enrolled as special students. These students comprised the graduating class of the Boston Dental College, compelled by the provisions of the anatomical laws of the State to receive their anatomical instruction in a duly chartered medical school. Of the remaining number of students, twenty per cent are women, and it is the universal opinion of the Faculty that the presence of women students at the lectures and the clinics has operated in a manner distinctly beneficial to the best interests of the School.

The four-year course is now in full operation. It is arranged in such a manner as to allow the students of the fourth year a certain amount of selection and specialization of their work, at the same time exacting a sufficiently thorough knowledge of the so-called specialties as to qualify them for the general practice of medicine. The raising of the standard exacted for entrance into the School has restricted the number of students less than was expected, and it is proposed to raise this standard in coming years. It is

gratifying to note that nearly ten per cent of the students already are recipients of degrees of various institutions of learning. New departments have been created in the School; and the establishment of courses in Military Medicine, under Dr. H. S. Dearing, and in Mercantile Medicine, embracing life insurance and the various forms of medical certificates, under Dr. E. C. Stowell, are new branches of instruction which it is believed will be adopted by other colleges.

During the year several changes have occurred in the Faculty. Dr. Harold Williams has resigned the chair of Pediatrics and has been elected Professor of the Principles and Practice of Medicine, in the place of Dr. Walter L. Hall, resigned. Dr. H. B. Chandler, ophthalmic surgeon to the Massachusetts Charitable Eye and Ear Infirmary, has been elected to the position of Professor of Ophthalmology in the place of Dr. Tenney, resigned. Dr. H. D. Arnold, Out-Patient Physician to the Boston City Hospital, has been elected Assistant Professor of Clinical Medicine, and Dr. Albert Prescott Mathews has been chosen Assistant Professor of Physiology. Assistant Professor Leary has returned from Porto Rico, and has been elected a member of the Executive Committee. Various gifts to the library have been received: from Mr. E. R. Warren, of Brookline, an exceedingly rare and interesting mezzotint engraving by Earlom; from Dr. W. H. Ruddick, of South Boston, a valuable gift of books. A large number of books have also been received from Dr. Joseph Williams, of Charlestown, and from Professor Pitkin. Throughout the year considerable original research has been carried on by members of the Faculty. This work could largely be increased if a fund could be created to defray the expenses of such investigations. Respectfully submitted,

HAROLD WILLIAMS,
Dean.

TUFTS COLLEGE MEDICAL SCHOOL, Boston, Mass.
September 20, 1899.

THE DENTAL SCHOOL.

REPORT OF THE DENTAL SCHOOL.

To the President:—

In submitting to you for the first time in the history of the College a report from the Dental School, an historical and explanatory note may be of interest. The Tufts College Dental School, formerly the Boston Dental College, was founded in 1868, and had pursued a course of uneventful success up to the year 1898, when, under the Act of that year, entitled An Act Relative to the Promotion of Anatomical Science, it found itself precluded from obtaining the material for carrying on the instruction in practical anatomy required for dental students by the American Association of Dental Faculties, of which body the Boston Dental College was a member. Temporary arrangements were accordingly made with the Tufts College Medical School whereby the students of the Boston Dental College were enabled to prosecute their anatomical studies. The Trustees of the latter institution, after mature deliberation, decided to consummate the plan they had long had under consideration, and to transfer their school to Tufts College. In arriving at this conclusion they were influenced not only by the anatomical question, but also by the constantly increasing requirements of the necessities of dental education. Among such increased requirements may be mentioned the demands of the studies of Organic Chemistry, Bacteriology, Physiology, and Pharmacology, branches which have expanded so greatly in recent years as to require special laboratory facilities. The Boston Dental College in its rapid growth was fast overflowing its laboratory accommodations, and a new building had

become an imperative need. The equipment of such new laboratories as were contemplated being essentially the same for a dental and for a medical school, it was felt by the Trustees that these branches could be more economically and judiciously carried on combined under a single head. Consequently, looking only to the eventual welfare of the College, strengthened by the support of leading alumni, and sacrificing their feelings of personal pride in the institution they had so ably administered for so many years, the Trustees of the Boston Dental College formally voted to transfer their school to the management of Tufts College. Steps were accordingly taken to bring about this result, and in 1899 the Boston Dental College, by special Act of Legislature, became the Dental School of Tufts College.

By this transfer the College has received into its fold a dental school in which upwards of one hundred and sixty students annually receive instruction leading to the profession of Dentistry. It has assumed a dental infirmary in which twenty-four thousand treatments are annually made. It has assumed the direction and control of a Faculty and Board of Instruction consisting of thirty-five teachers, all of whom are distinguished in their various departments. With such material, and with the ambition to aim only at the highest standard, it is reasonable to predict that this new department of the College shall be regarded as one of the leading institutions of its character in the country.

Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE DENTAL SCHOOL, formerly
BOSTON DENTAL COLLEGE, Boston, Mass.

September 20, 1899.

THE BROMFIELD-PEARSON
SCHOOL.

REPORT OF THE BROMFIELD-PEARSON SCHOOL.

To the President:—

No radical changes have been made in either of the two departments carried on by the School.

The special preparatory course was attended by seven students. Members of the other departments of the College are also admitted to the mathematical classes of this course for the purpose of removing entrance conditions, and conditions in Mathematics 1.

The course in Manual Arts given by the School is attended by all engineering students, the classes being as follows: Carpentry and Turning, 20; Pattern-Making, 15; Forging, 13; Vise and Machine Work, 13; Senior Project Work, 7. The Senior work involving practical machine construction included the completion of the Rotary Transformer and the Mordy type Alternator with the direct connected motor. These machines will be a valuable acquisition to the electrical laboratory, besides having served as excellent examples of machine construction and original design.

Through the efforts of the late Mr. Charles Whittier money was raised for the purchase of a twelve horse-power slide valve engine for experimental purposes, a piece of apparatus much needed for the steam laboratory. A small yacht engine has been presented to the department by Mr. Charles M. Donohoe, a member of the School.

During the past year no addition has been made to our equipment of machine tools, although we are greatly in

need of tools which would necessitate an expenditure of about seven hundred dollars.

Respectfully submitted,

GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE,

September 20, 1899.

THE BARNUM MUSEUM.

REPORT OF THE BARNUM MUSEUM OF NATURAL HISTORY.

To the President:—

With the resignation of Professor Marshall, who for so many years had charge of the collections of the College, and who brought them to such a fine state as they now are, the administration of the Museum has devolved upon me.

In the Museum the most noticeable alterations are the erection of six flat cases upon the gallery rail; while two large upright cases to be placed upon the floor are in course of construction. When these are completed it is intended to devote the floor exclusively to mammals and birds, while the lower vertebrates and the invertebrates will be gathered in the gallery.

These rail cases at present are used in part for the collection of insects; in part for the storage of specimens which are awaiting incorporation in the general collection.

The work done on the collection during the past year has been slight. A number of echinoderms and alcoholic invertebrates have been mounted and placed on exhibition, while about one hundred species of shells have been similarly mounted, but are awaiting case-room before being exhibited. The fossils of the Cambrian, Silurian, and Devonian periods have been newly labelled and mounted on black tablets, showing the appearance which it is hoped the whole collection of fossils may ultimately present.

The additions to the Museum, while not large, are greater than for some years. Most noticeable is a collection of seven hundred and twenty-six specimens of insects presented by Mrs. Erastus Woodward, of Somerville. This

collection, which is finely mounted, was made by her son before he was nineteen years old. The other additions are as follows :—

Geo. A. Arnold, '91, *Boltenia bolteni* from Nantasket ; Dr. C. R. Eastman, Fossil *Peneus* from Solenhofen, Bavaria ; I. B. Gage, '99, *Astrophyton agassizii* from Riggsville, Maine ; J. S. Kingsley, one hundred and thirty Devonian fossils from Central New York, six *Trilobites* from Braintree, Mass., Hyperid Crustacea and *Stylactis* from Long Island, Porphyritic Diabase from Manchester, Mass. ; C. A. Pettengill, 1900, minerals from Hudson, Mass. ; Purchase, *Pleurobrachia*, *Thysanopoda*, *Virbius*, *Sagitta*, *Cynthia*, *Solaster*, *Pinnixa*, *Dactylometra*, *Tima*, *Cirratulus*, *Platyonichus* ; John F. Read, two corals from Madagascar ; Sumner Robinson, *Favosites* from Piscataquis Co., Maine ; C. H. Wells, '95, minerals, fossils, and shells ; W. R. Whitehorn, '95, thirteen minerals and thirty-six fossils from Pictou, Nova Scotia.

I am, etc.,

J. S. KINGSLEY,

Director.

TUFTS COLLEGE,

September 20, 1899.

THE GODDARD GYMNASIUM.

REPORT OF THE DIRECTOR OF THE GODDARD GYMNASIUM.

To the President:—

Thanks are due the Trustees for the exceedingly convenient and commodious gymnasium which their interest has provided for the use of the students of Tufts College. It has abundantly answered an urgent appeal that has been heard for years.

While the work for the past season has been generally along the same lines as in former years, more attention has been paid to the individual, and to those individuals who especially needed the benefit of the gymnasium. The basis for this exercise was the result of a thorough physical examination given preliminary to the work to all members of the two under classes, and to as many others as were interested. A chart with tracings of the measurements and strength tests was adopted this year, that each man might plainly see his own deficiency and be the more willing to try for improvement under specific directions from the instructor. A second examination at the end of the course was given for comparison.

The director, being interested in outdoor sports, examined the football players before and after the season of play, and found that all the men had greatly improved generally, and that much liable one-sidedness was very considerably rectified. We look forward to the time when nearly all the men, as in English schools and colleges, will take more than an onlooker's interest in hearty, manly sport.

Many men of the upper classes have asked if they would be accorded credit if they should take physical training

regularly, and I should be pleased to have the subject receive consideration. The increased facilities of the new gymnasium and the better opportunity to do more and broader work suggests that the call be favorably answered.

The young women of the College were again compelled to make use of the Goddard Gymnasium, and were under the personal care and instruction of Miss Carvill, who gave them physical examinations before and after the year's exercise, and who adopted both individual and class teaching of corrective, hygienic, and recreative gymnastics. The use of the same building by both men and women caused many inconveniences, and quite seriously interfered with the work of each. I am pleased to learn that provision will be made soon to remedy this condition.

The young women have shown their appreciation of the advantages of outdoor exercise by the building at a considerable expense of three very excellent tennis-courts. It was a step in the right direction.

Respectfully submitted,

CHAS. C. STROUD, M.D.,

Director of Goddard Gymnasium.

TUFTS COLLEGE,

September 20, 1899.

THE SUMMER SCHOOL OF
CHEMISTRY.

REPORT OF THE SUMMER SCHOOL IN CHEMISTRY.

To the President:—

The length of the term this year has been the same as in past years, six weeks, beginning July 5. Nineteen students have been in attendance, the same number as last year. Two of these were teachers in the public schools, two were young men intending to enter college in the fall, one was a mining-man, one a druggist, and the remaining thirteen were students from Tufts College. Nine students took Chemistry 1; seven, Chemistry 2; three, Chemistry 3; two, Chemistry 4; one, Chemistry 7; and three, Chemistry 10. It is hardly necessary to call attention to the fact that all these courses are college courses, although given in a summer term. The time allowed and methods of instruction have been the same as during the college year.

The Summer School has again been fortunate in having Dr. Leighton on its Board of Instruction.

Respectfully submitted,

FRANK W. DURKEE.

TUFTS COLLEGE,

September 20, 1899.

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TUFTS COLLEGE
PUBLICATIONS

VOLUME I. No. 1

ANNUAL REPORT
OF THE
PRESIDENT
OF
TUFTS COLLEGE
1899-1900



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ANNUAL REPORT
OF THE
PRESIDENT
OF
TUFTS COLLEGE



1899-1900

MALDEN
H. W. WHITTEMORE & CO.
121 MADISON STREET
1901

PRESIDENT'S REPORT.

1899-1900.

To the Honorable and Revered the Trustees of Tufts College:—

GENTLEMEN:—The President of the College has the honor to submit the following report for the academic year 1899-1900; namely, from September 20, 1899 to September 19, 1900.

Happily there have been no deaths either among the Trustees or the active members of the Faculty.

Moses True Brown, A.M., who for twenty-four years, from 1866 to 1890, was Professor of Oratory, and who since 1890 has been named upon our roll as Professor Emeritus, died, during the year, in Sandusky, Ohio, where he has lived since his resignation. Professor Brown had acquired a reputation as a teacher before he came into the service of Tufts College. He gave himself with great enthusiasm to the specialty which he was called to teach and the results of his work may be seen today in the ability of many eminent men who received their training in the art of public speaking from him. He was painstaking and thoughtful, and the conclusions which he had reached in regard to oratory, gave evidence of a philosophical and original mind.

Appointments upon the staff of instruction have been made as follows:—

JOSEPH KING KNIGHT, D.D.S., *Professor of Prosthodontia.*

J. CHANNING STOWELL, A.B., M.D., *Assistant Professor of Children's Diseases.*

FRANK BERRY SANBORN, C.E., M.S., *Assistant Professor of Civil Engineering.*

GEORGE W. KAAH, M.D., *Assistant Professor of Clinical Gynaecology.*

- WILLIAM KENDALL DENISON, A.M., *Professor of the Latin Language and Literature.*
 HOWARD S. DEARING, A.M., M.D., *Assistant Professor of Clinical Medicine.*
 CHARLES ST. CLAIR WADE, A.M., *Professor of the Greek Language and Literature.*
 TIMOTHY LEARY, M.D., *Professor of Pathology and Bacteriology.*
 EDWIN COURTLANDT BOLLES, PH.D., D.D., *Dickson Professor of English and American History.*
 LAWRENCE B. EVANS, PH.D., *Professor of History.*
 HERBERT WARREN WHITE, M.D., *Assistant Professor of Theory and Practice of Medicine.*

Re-appointments have been made as follows :

- GARDNER W. ALLEN, A.B., M.D., *Instructor in Genito-Urinary Surgery.*
 EDWARD L. TWOMBLY, A.B., M.D., *Clinical Instructor in Medicine.*
 GEORGE A. WEBSTER, M.D., *Instructor in Otology.*
 GEORGE F. HARDING, M.D., *Instructor in Dermatology.*
 WARREN F. GAY, A.B., M.D., *Instructor in Surgery.*
 JOSEPH C. STEDMAN, M.D., *Instructor in Rectal Diseases.*
 EDWARD E. THORPE, M.D., *Instructor in Medical Chemistry.*
 CHARLES F. PAINTER, A.B., M.D., *Instructor in Orthopaedic Surgery.*
 CHARLES H. CHASE, S.B., *Instructor in Shopwork.*
 HARRY GRAY CHASE, B.E.E., *Walker Special Instructor in Mathematics and Instructor in Physics.*
 CHARLES C. STROUD, A.B., M.D., *Instructor in Physical Training.*
 VIRGIL L. LEIGHTON, A.M., PH.D., *Instructor in Organic Chemistry.*
 SAMUEL C. EARLE, A.M., *Instructor in Modern Languages the Engineering Department and Assistant in English Literature.*
 EUGENE T. MCNAMARA, M.D., *Instructor in Electro-Therapeutics.*
 LUDWIG DEMETER, *Instructor in Modern Languages.*
 CHARLES D. KNOWLTON, M.D., *Instructor in Theory and Practice of Medicine.*
 ELIZABETH A. RILEY, M.D., *Instructor in Gynaecology.*
 RICHARD F. O'NEIL, A.B., M.D., *Instructor in Bandaging and Apparatus.*
 WILLIAM J. DALY, M.D., *Instructor in Ophthalmology.*
 GEORGE C. AINSWORTH, D.D.S., *Instructor in Orthodontia.*

EUGENE THAYER, A.B., M.D., *Demonstrator of Anatomy.*

JOHN I. FRENCH, M.D., *Instructor in Materia Medica and Therapeutics.*

RICHARD F. CHASE, M.D., *Assistant in Clinical Medicine.*

HENRY J. BARNES, M.D., *Lecturer on Hygiene.*

WALTER F. THOMPSON, A.B., *Assistant in English.*

WILLIAM R. WHITEHORNE, A.M., *Assistant in Qualitative Analysis.*

LIZZIE MAUD CARVILL, A.B., *Instructor in Physical Training for Women.*

WALTER J. OTIS, M.D., *Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, A.B., M.D., *Lecturer on Laryngology.*

WALTER I. BRIGHAM, D.D.S., *Lecturer on Operative Dentistry.*

FRED C. MERRILL, D.D.S.,

J. ROSS HARDY, D.D.S.,

EDWARD A. QUINN, D.D.S.

Instructors in Mechanical Dentistry.

WILLIAM P. HOUSTON, D.D.S.,

JOHN W. FORBES, D.D.S.,

EDGAR O. KINSMAN, D.D.S.,

JAMES R. PIPER, D.D.S.,

KNUT J. LUTROPP, D.D.S.,

HENRY H. PIPER, D.D.S.,

WILLIAM RICE, D.D.S.,

WALTER I. BRIGHAM, D.D.S.,

BURLEIGH C. GILBERT, D.D.S.,

Instructors in Clinical Dentistry.

HENRY W. RUGG, D.D.,

WILLIAM H. DEARBORN, B.D.,

FRANK O. HALL, B.D.,

RICHARD EDDY, D.D.,

HENRY B. METCALF, A.M.,

Lecturers to the Divinity School.

KATHERINE L. STEBBINS, A.B.,

Secretary's Clerk.

Proctors.

FRANCIS D. WILSON, PH.D.,

SAMUEL P. CAPEN, A.M.,

VIRGIL L. LEIGHTON, PH.D.,

CHARLES C. STROUD, M.D.,

The whole number of students admitted to College in the regular way in all departments is two hundred and sixty-two. They are distributed as follows :

College of Letters	92
Divinity School	3
Medical School	105
Dental School (Freshmen)	58
Bromfield-Pearson School	4
	262

But as all the students of the Dental School were enrolled with us for the first time, there should be an addition of one hundred and five more, making a total of admissions of three hundred and sixty-seven.

The whole number of students enrolled in the College is seven hundred and twenty-five. They are distributed as follows :

College of Letters:—

Graduate	8
Seniors	49
Juniors	55
Sophomores	56
Freshmen	64
Special	38
	270

Divinity School:—

Graduate	1
Seniors	3
Middle	4
Juniors	5
Sub-Junior	1
Special	1
	15

Medical School:—

Seniors	38
Juniors	40
Sophomores	69
Freshmen	86
Special	19
	252

Dental School:—

Seniors	54
Juniors	53
Freshmen	58
	165

Summer Schools	19
Bromfield-Pearson School	4
Total number of students.	725
Names appearing twice	14

The whole number of women students in all departments is one hundred and sixty-seven. They are distributed as follows :—

College of Letters	95
Medical School	67
Dental School	5
	167

The whole number of degrees given in course at the last commencement was one hundred and thirty-five as follows :—

Bachelor of Arts	31
Bachelor of Science :—	
In Civil Engineering	7
In Electrical Engineering	8
In Chemistry	1
	16
Bachelor of Divinity	3
Doctor of Medicine	33
Doctor of Dental Medicine	44
Master of Arts	6
Master of Science	2
Total number degrees in course	135

The improvements upon grounds and buildings have been considerable.

GODDARD GYMNASIUM.

The re-construction and renovation of the Goddard Gymnasium were completed early in the year. The value of this improvement is very great. The building is thoroughly adapted to every branch of physical training. The work of instruction in this department has been rendered easy and effective. The spirit of the young men in refer-

erence to athletic sports has been changed perceptibly by the facilities that are now afforded for preparation for their various contests. It only remains for the young women of the College to be provided with a building, equally well adapted to their physical needs, for their exclusive use, to make the equipment of the College reasonably complete in the instrumentalities which are so important in the education and physical development of both men and women. The incidental uses of the Gymnasium have been found to be of real value. The number of persons desiring tickets to the commencement dinner was about eight hundred and there was no difficulty in furnishing every one with a seat. We have, however, nearly reached the limit of our capacity in this direction, and if there should continue to be an increasing demand for tickets, it will be necessary, before long, to restrict the sale of them to the Alumni.

On the main floor of the building is a room, designed for a trophy room which may also be used by the Athletic Association for its meetings. Above this, on the second floor, are the offices of the Director of Physical Culture. On the floor still higher are two large rooms, which have been assigned to the Department of Music, one of which is used for recitations, in which also are placed the musical instruments needed for illustrative work, and the other has been fitted up for a department library, where the books of the Metcalf-Ritter Library and other books of special utility are deposited. Music is thus provided with ample space and isolation.

ROBINSON HALL.

The construction of Robinson Hall which was going on at the time of my last report, consumed the entire winter and spring. The work was completed about the first of June. The vacation season has been employed in fitting and furnishing it so that it might be ready for use during the next College year. The laboratories have been fitted

with shelves and benches, desks have been placed in all the recitation and lecture rooms. The scientific apparatus and machinery which have been accumulating in Ballou Hall almost ever since the College was founded, have been removed and set up in the new building; so that we are well furnished with facilities for instruction in the various branches of engineering in which courses are now offered.

BOILER HOUSE.

There is, however, one important omission. For various reasons it was not thought desirable to place a plant for heating and power inside the Robinson building where so many delicate experiments were to be conducted and where so much sensitive apparatus would have to be employed. Yet heat and power are a necessity. In my last report I called attention to the need of a central station from which heat, light and power could be supplied to the whole College. During the year a careful examination has been made. It has been found that such a station would be an economy and advantageous in many ways. But the outlay for such a station thoroughly equipped with connections, reaching all parts of the grounds, would approach one hundred thousand dollars. Manifestly, no matter how great the need, nor however clear the economy or the utility of such a system, the College would not be justified in borrowing money or in investing its own funds, provided it had any for investment, in so large an undertaking. We wait for some generous donor to give the money for this specific purpose. Meanwhile, it has been determined to install a boiler in a temporary structure to furnish heat and power to Robinson Hall and the Bromfield-Pearson Building. The boiler is already in place and the building well on the way toward completion. I may add that the boiler not only has capacity sufficient for the two buildings named, but for Commons Building and the Chemical Laboratory, if at any time it should be deemed best to connect them.

GRADING AND TALBOT AVENUE.

Under the direction of the Executive Committee an important scheme of grading has been carried out. When College Avenue was built, in 1862, a deep cut through one end of College Hill was made, leaving a high bank on either side of the street. By degrees the surplus earth on the easterly side of the street has been taken away until the street level has been reached. On the westerly side the bank has remained in the state in which it was left by the county authorities when the road was built. In some respects it was unsightly, while it was a constant source of trouble and expense to keep it in place. It was determined after much deliberation and study to remove a portion of the material and bring the ground to an easy and natural slope as far back nearly as the buildings of the Divinity School. The plans for this work were prepared by Mr. Charles D. Elliott, an accomplished landscape engineer. The committee, perhaps, would have hesitated to incur so great an expense, had it not been that the material could be made useful immediately in the construction of Talbot Avenue, a street projected some time ago to run parallel with Professors Row. As the latter street has no more available space for building and as any future houses for members of the teaching force must be upon the new street, the construction of Talbot Avenue seemed to be imperative. This roadway has now been built, roughly, to be sure, for almost its entire length from College Avenue to Packard Avenue, and a considerable tract of land opened for building. Another thing that caused some hesitation was the fact that the grading would involve the destruction of a number of beautiful trees, some of which were set out nearly forty years ago and had attained fair and graceful proportions. But upon reflection it was thought that the grading would become ultimately a necessity, and therefore the sooner the work was accomplished the better. It appears to be the unanimous judgment that the work is a great improvement to the ap-

pearance of the College grounds, and, with the judicious setting of new trees, in a few years, the beauty of the approaches to our almost incomparable site will be greatly enhanced.

HISTORY AND ECONOMICS—DICKSON WILL.

The College has been enabled to make a most welcome addition to its teaching force, through the generosity of the late Walter Scott Dickson. Early in the year Mr. Dickson intimated his desire to do something to promote the study of English and American History in Tufts College. At first he had in mind only the founding of a lectureship. But upon fuller and more careful consideration of the subject he concluded to create a full professorship. Accordingly he made an agreement under seal to give at his decease the sum of twenty-five thousand dollars to which was to be added thirty thousand dollars more on the decease of an aged beneficiary who was to have a life interest in a trust for that amount, intimating at the same time that he should materially increase the amount by devise. After his death, which occurred in May last, it was found that he had made Tufts College, with four other institutions, a residuary legatee. The will to be sure is under contest. But those who were best acquainted with Mr. Dickson, his business methods and independent judgment, do not believe that it can be shaken. In accordance with Mr. Dickson's request, the Reverend Edwin Courtland Bolles, PH.D., D.D., was made the first incumbent of the chair endowed by him. It is perhaps needless to add that Dr. Bolles, by his learning, his long devotion to the study, particularly, of English History, his eloquence and enthusiasm, is eminently fitted for the work to which he has been called.

In February Assistant Professor Edwin A. Start who, since 1892, has been in charge of History, tendered his resignation to take effect at the end of the College year. Mr. Start's work in creating this department, or rather in reviving a department, which, at the beginning was a

very prominent one in this College, has been very efficient. His work has not been wholly confined to the College. He has been influential in stimulating an interest in historical studies in the secondary schools of New England and in setting a higher and better defined standard of the history requirement for admission to college. His departure is a serious loss to the teaching force. In making provision for the vacancy occasioned by the resignation of Mr. Start a call has been extended to Lawrence B. Evans, PH.D., late of the Agricultural University of Kansas, to become Professor of History, and the call has been accepted. Dr. Evans is well known by his contributions to the literature of both history and law. It is expected that in addition to his historical courses he will be able to relieve the President of some of the teaching that has fallen hitherto to him and that his work will be closely articulated with that of Professor Metcalf in political science. Indeed, with three such teachers as Professors Bolles, Evans and Metcalf, when their relations shall have become thoroughly adjusted, the College ought to be able to offer courses, in the field of economics and history, unique in interest and value.

THE NEW REQUIREMENTS FOR ADMISSION AND THE GROUP SYSTEM.

The new scheme of requirements for admission to College has now got into active operation and begun to bear fruit. As was expected, when the scheme was first devised, we are getting students from a much wider range of schools than formerly and with a greater variety of preparation. So far, moreover, there is no diminution in the quality of the material, as it was feared by some would be the case. Indeed, it has been found already that not a few of the brightest and most promising pupils have been trained by other than the traditional methods, and upon subjects which once were barred. The belief on which this experiment was based, that it would not only increase the number of persons going to college, but open a door

to many who otherwise could never secure a liberal education, seems to be fully justified. The practice of placing certain related subjects in groups, with a major department at the head, requiring each student at the beginning of his Sophomore year to select one, and to do, as the condition for his graduation, a certain amount of work in his major subject, together with a minimum in the related subjects, meets with increasing favor among both pupils and teachers. There is under consideration by the Faculty a plan to enlarge the system still further by placing both Mathematics and Philosophy in elective groups. The chief argument for the system is that it secures all the advantages of the elective system and avoids some of its worst evils. Under it the pupil chooses early in his college career a subject for which he has a decided taste and aptitude, and by reason of the conditions under which it is taken he is reasonably sure to go out of college, not only thoroughly grounded in that particular subject but with that broad and enlightened view of it which is the certain evidence of liberal training.

THE MIRACLE PLAY.

It is, perhaps, proper to mention the "First Pageant of the Shepherds" which was produced at the College during the winter. The play was the result of a vast amount of study and effort on the part of Professor Maulsby, in which he was ably assisted by other members of the English department, and was as perfect a reproduction of the earliest form of the dramatic art in England as scholarly research could make it. The undertaking attracted the attention of scholars in other colleges and universities, in different parts of the country, and the perfection with which it was carried out reflected credit upon Professor Maulsby and his associates, and upon the College. Work of this character deserves, and is pretty sure to receive the encouragement both of the Trustees and the public.

THE PROFESSIONAL DEPARTMENTS.

THE ENGINEERING DEPARTMENT :—During the vacation of 1899, only a few weeks before the opening of the work of the year, Assistant Professor Frank T. Daniels, resigned his connection with the board of instruction. Mr. Daniels had been a teacher of drawing and civil engineering in the college since 1891. His work as a teacher had been of constantly increasing value. For some time also he had held the office of Secretary of the Faculty. His resignation, therefore, was felt to be a distinct loss. Coming as it did at the very commencement of the work of the year a serious responsibility was thrown upon the Dean of the Engineering department and the President. We were very fortunate however, in coming to an engagement with Mr. F. B. Sanborn, an engineer of experience and a gentleman of the highest professional training, who was able to come at once into working relations with the College. It gives me satisfaction to be able to report that his work has been successful and that it is full of promise for the future. The outlook for our engineering department, with its able and accomplished corps of teachers and its new and more ample facilities was never so fair as at the present time.

THE DIVINITY SCHOOL :—A year ago I was compelled to call attention to the decline in the attendance upon the Divinity School and to point out what I conceived to be some of the causes of this decline. Among these I think I mentioned the long depression in business which had weakened the financial ability of many churches and diminished the demand for trained ministers. I am happy to say now that there are signs of a reaction. The increasing industrial prosperity of the country has created a new demand and put heart into churches which for a time were dormant. There is evidently a growing disposition once more on the part of young men to turn their attention to theological study. There is, as will ap-

pear from the Dean's report, a distinct effort on the part of the authorities of the School to secure a higher grade of preparation in candidates and to turn aside those who come directly from secondary schools for more thorough and protracted study. Already there is evidence that the entering number for next year will be up to the former average; and they will be men of high attainment.

THE MEDICAL AND DENTAL SCHOOLS:—The Medical School has continued to give evidence of an almost unexampled prosperity. The number of students is constantly and rapidly increasing and they are exhibiting also a steady improvement in their preparation. The facilities of the School have been materially strengthened. The teaching force has been increased and organized for more effective service. The aim has not only been to secure men upon the staff of instruction of high professional standing and repute, and men as far as possible who can command clinical privileges, but men who are apt to teach and who are willing to give the requisite time at the appointed hours for class-room work. We have been eminently successful in our efforts in this respect. The work done in all departments is serious and thorough and of the most modern type. The School has already come to have a recognized place among the better schools of the country and students are resorting to it, from a very wide area, because of its high repute. If any educational institution can command its own future this one may be said to do so.

In deciding to assume the Boston Dental College, one part of the plan was to bring it into the closest possible relations with the Medical School. Dentistry, in passing from an art of high grade to a learned profession, is sure to demand a thorough grounding of the practitioner in some of the fundamentals of medical education. A considerable part of the training of the dental student must be identical with that of the medical student. The work of this year has consisted largely in the revision of the curriculum of study and bringing the reorganized teaching

force into easy working relations with the student body. On the whole, very gratifying progress has been made. One serious obstacle, however, has been the crowded condition of the recitation and lecture rooms. The building provided for our use on the corner of Shawmut Avenue and Rutland Street would have sufficed for some time longer for the Medical School alone. But when we came to bring the students of the Dental School for a certain portion of their work into the same building it became at once wholly inadequate.

One of the conditions of the agreement between the Trustees of the Boston Dental College and the Trustees of Tufts College was that the latter body should provide a building for the Dental School. At first it was thought that this could be accomplished by the purchase of land in immediate proximity to the Medical School and the erection of an additional building. But as soon as it was found that we were in the market for this purpose, real estate owners advanced their prices for land to nearly double its true value. After exhausting nearly every resource to get a site in the immediate neighborhood of our existing plant, and after a very careful study of the situation and the problems involved, it was determined to look elsewhere, get an ample estate and build new from the foundation for the combined uses of both schools. The Trustees were fortunate in securing, upon Huntington Avenue, a tract of land, covering twenty-two thousand square feet, at a very reasonable price. The lot is bounded by streets upon four sides and is well adapted for the kind of buildings which we desired to erect. The situation secures light and air in abundance. Several months were spent in studying and perfecting plans. Every teacher, in either school, who has special needs in laboratory or lecture-room, has been consulted. Buildings have been devised which seem to meet every possible modern demand, and the two have been united in one for the purposes of harmonious and effective administration. The work of construction was

placed under contract in the early part of July and is now going forward with rapidity. It is hoped that a formal opening of the schools may be had in their new quarters before the end of the next College year.

I call attention to a report in detail of the several departments in the College of Letters.

LATIN.

The Freshmen, forming two divisions of the class known as Latin 1, read the *De Senectute* of Cicero, the first and part of the second books of Livy and Horace's Odes and Epodes. Thirty-four were enrolled.

In Latin 2 the Sophomores read the *Germania* and *Agricola* of Tacitus, the *Cena Trimalchionis* of Petronius, the Cupid and Psyche episode from Apuleius, and Pliny's Letters. Enrolment, ten.

Latin 4 was elected by fifteen Juniors and Seniors. Pliny's Letters, the Satires and Epistles of Horace, and various selections, in prose and verse, made up the year's work.

A new half course, Latin 12, was given. Ten students from the three upper classes elected it, reading the *Eclogues* and a portion of the *Georgics* of Vergil, and abundant selections from Lucretius.

Latin 9, a half-year course of lectures on the Private Life of the Romans, was chosen by ten, mostly from the Sophomore and Junior classes. For the first time the Professor was able to use the screen for illustration, and found that it added materially to the profit and interest of the course.

Latin Composition was provided for by two classes, Latin 5 and Latin 6, each meeting one hour a week throughout the year. The former or elementary course, numbered twelve students, the latter eight for the first term of work, five for the second term.

A few alumni, former winners of the Latin Prize, contributed for the purchase of books bearing on the authors

that are henceforth to form the basis of the competition. The *Ars Poetica* of Horace was chosen for the competition this year. Annie I. Ryan and Mary Alice Rines presented papers which gave indication of very careful and minute study of Horace's poem.

The Professor hopes that some friend or friends of the department will provide an adequate collection of lantern slides on classical subjects. Judiciously used, they are a very valuable supplement to the study of the life, literature and art of the ancients. With fifteen-hundred well selected slides, the department would feel reasonably well-equipped. The beginnings of a collection, it might be added, have already been made. The Latin department has shared with the Greek the benefit of a special room in the library, into which have been put and carefully arranged important books in the library bearing upon the two subjects. Students are able to work there pleasantly and conveniently. Some eight or ten students rendered valuable service to the departments by preparing a card catalogue of articles of classical interest in the magazines belonging to the library collection.

GREEK.

Professor Schneider had charge of the following courses. Course 5, three recitations a week throughout the year, one hour devoted to sight reading. Five students attended this course. The text-books were *Idyls of Theocritus*, *Plato's Symposium*, and *Odes of Pindar*. For sight reading, *Thucydides book VII, the Sicilian War*. Lectures were given upon the *Symposium*, the characteristics of the various speakers, their speeches and the relation of the various speeches to one another and the various views of the interpreters with regard to the object which Plato had in mind in writing the *Symposium*.

Course 6, three recitations a week throughout the year, one hour of which was devoted to sight reading. Seven students attended this course. The Text-books used were

Plato's Republic and Aristotle's Ethics; for sight reading, Thucydides, book VII. Five students graduated with honors and one with honorable mention.

Under Professor Wade, GREEK 1, the elementary class, meeting six periods a week, accomplished the full entrance requirements.

GREEK 2, composed mainly of Freshmen and former members of Greek 1 read: Plato's Apology, Homer's Odyssey Books XVII-XXIV, Euripides' Medea and finished the year with the seventh Oration of Dio Chrysostom, as edited by Prentice. At intervals during the second term stereoptican lectures were given illustrating the points of religious, artistic and social antiquities suggested by the texts read. Three periods a week.

GREEK 3, composed of Sophomores covered unusually well somewhat more than an average amount, reading Lysias, eight orations, Thucydides, Book 1 entire, and one play each of Aeschylus, Sophocles and Euripides. Lectures on the Orators and the drama were delivered. Three periods a week.

GREEK 6, composed of Freshmen and Sophomores, met once a week for the year for the study of Greek Composition.

GREEK 8. Instruction was given to a class of Seniors meeting twice a week for the year, in the History of Greek Sculpture. Gardner's Handbook of Greek Sculpture and Robinson's Catalogue of casts in the Boston Art Museum were used as text-books. During the latter part of the course the Professor lectured from the casts in the Boston Art Museum.

Throughout the year instruction was given three hours a week to a class composed of one candidate for the degree of Master of Arts, and one properly qualified undergraduate. In the class room were read: the Oration on the Crown of Demosthenes, the Choephoroe of Aeschylus, the Electra of Euripides and the complete plays and fragments of Sophocles. Some work was also done in the elements

of the history of Greek Vase Painting, using as guides Rayet et Collignon, *Histoire de la Céramique Grecque* and Robinson, *Catalogue of Greek, Etruscan and Roman Vases in the Boston Art Museum*. Miss Anthony presented a thesis on the Herakles-Myths of Sophocles as illustrated in Greek Art. She was granted the degree of A.M. in June 1900.

During the past year increased facilities have been provided in the library for the Classical Departments. A room properly furnished with tables, consulting desk for lexica, etc., has been set apart for the books in Greek and Latin. In cooperation with Professor Denison of the Department of Latin the books in the so-called Classical Library have been classified and arranged. A card catalogue of the classical magazines has been begun by students working under the direction of instructors.

While still in need of many important works, the classical library shows a most gratifying increase in the number of books and periodicals.

MATHEMATICS.

Professor Benjamin G. Brown, who has taught continuously in the College for forty years, in what he calls his final report, makes some observations which are worthy of serious attention. He gives a brief sketch of the changes that have taken place in the work done annually since he began to teach, in 1861. For four years, filling the positions of tutor and Walker Special Instructor, he taught the Freshman and Sophomore classes four times a week in Plane and Solid Geometry, Algebra, Trigonometry, and Analytic Geometry. No attempt was made by election or otherwise to carry the study of Mathematics beyond this point. After he was appointed Walker Professor of Mathematics and his successor as Walker Instructor had been selected, in order to relieve Professor Marshall, who was then burdened with the care of several departments, he was requested to teach Mechanics, Physics and Astron-

omy, which three studies were pursued four times a week through the junior and senior years. By these changes it happened that he taught one class four times a week through the whole four years ; that is, one fourth of the instruction received at Tufts by that class was given by him as Walker Special Instructor and as Walker Professor of Mathematics. After this year the work was divided ; the first two years, the Instructor had charge of the class ; and the Professor, for the last two years. The work in Physics and Astronomy was mainly mathematical. Gradually election was introduced into the curriculum. Solid Analytic Geometry and Differential and Integral Calculus were put among the elective studies. For a few years a small number of engineering students with occasionally one of the regular college students elected these subjects. As the engineering department grew in importance and its course of study was increased from two to three, and finally, to four years, these studies were made compulsory. Thus every year courses in Solid Analytic Geometry, the Calculus for one year, and an advanced course in Calculus for one term, were given to the engineers, and these courses were open as electives to students in the College of Letters who had done good work in the Mathematics of the first two years. The number electing was always small. Other elective courses in Determinants and in Quaternions, each for one term, were added, and these were attended by a few from the College of Letters and also from the Engineers. For two or three years courses were given in Differential Equations and in Least Squares. This addition of courses seemed to be demanded by the growing interest in advanced Mathematics which had manifested itself in many of the Colleges of New England.

Their large number, and also the fact that it became necessary to teach the engineers in classes separate from the regular College students, thus adding greatly to the number of teaching hours of the Professor, rendered it

necessary to entrust some of the classes besides the regular Freshman and Sophomore to the Walker Instructor. Finally it became manifest that the welfare of the engineering department, demanded supervision by one man, from the beginning to the end of the course, of all the Mathematics in that department, the basal department of all the engineering courses. Fortunately for the College, at this juncture, Mr. Wren, who was Walker Special Instructor, had manifested ability of so high an order, both as instructor and as a student of Mathematics, that he was unhesitatingly selected to take charge of the Mathematical work of the engineers and was appointed Assistant Professor of Mathematics. Professor Brown rejoices that, on surrendering the care of a department with which he has been entrusted for forty years, he leaves it in the hands of so competent a man. He also feels no little satisfaction in knowing that the number in the present Sophomore class electing Analytic Geometry is 15 out of a class of 44. The number electing in this department has been increasing gradually of late years, but he was greatly surprised at the marked increase this year.

The Professor has claimed in several of his reports that it was unwise to compel students to whom Mathematics is an almost impossible study, or to whom it is irksome or thoroughly distasteful because of very poor instruction in secondary schools or a great natural inaptitude, to pursue the study of Mathematics in college. He is still strongly of the same opinion, notwithstanding the strong arguments that have recently been advanced by wise educators in favor of compelling students to study subjects for which they have a strong dislike. If he were to remain a member of the Faculty, he would endeavor to have the Mathematics made not compulsory for all the entering students, certainly excepting those who belong to the classes mentioned above. Of all the modifications of our present custom thus far suggested, it appears to him that the one

which should call forth the least opposition, is the putting of Mathematics in a group with Physical Science and requiring a student to take six hours in one of the four subjects of this group.

The following is a synopsis of the work for the year.

Mr. Chase taught one section of the class taking Course

1. Assistant Professor Wren taught,

1st term.	Engineers	Freshmen, Algebra, 4 hours per week.			
		“ Trigonometry, 2 hours per week.			
		Sophomores, Calculus, 3	“	“	“
		Juniors, “ 3	“	“	“
		Seniors, Diff. Equations, 2	“	“	“
	Elective	Math. 9, 2 eng. 4 A.B's, 3	“	“	“
		“ 12, 2 eng. 3 A.B's, 3	“	“	“
		Total 20 hours per week.			

2nd term.	Engineers	Freshmen, Analytic Geometry 4 hours per week.			
		Sophomores, Calculus, 3 hours per week.			
		Juniors, Calculus, 2 hours per week.			
	Elective	Math. 11, 3 hours per week.			
		Math. 13, 3 hours per week.			
		Total 15 hours per week.			

Professor Brown taught,

1st term.	Mathematics 1, 1 Section, 3 hours per week.				
	“	7,	3	“	“
	“	8,	3	“	“
	“	3,	3	“	“
	“	4,	3	“	“
2nd term.	Mathematics 1, 3 hours per week.				
	“	2,	3	“	“
	“	5,	3	“	“
	“	6,	3	“	“
	“	8,	3	“	“

CIVIL AND MECHANICAL ENGINEERING.

We regret the loss which has been met by the department in the resignation of Professor Frank T. Daniels. During the past eight years he has rendered most valuable

service in the capacity of instructor, and secretary of the engineering board, and we are indebted to him for much that has promoted the welfare and development of the institution.

The courses given by Professor Bray during the past year are as follows :

First Term.

Applied Mechanics, 3 periods a week, 16 students.

Hydraulics,	3	"	a	"	21	"
Road Engineering	3	"	a	"	9	"
Road Surveying	2	"	a	"	8	"
Structural Design	2	"	a	"	8	"
Roofs and Bridges	2	"	a	"	7	"

Second Term.

Applied Mechanics, 3 periods a week, 16 students.

Road Engineering	3	"	a	"	8	"
Structural Design	2	"	a	"	7	"
Bridge Design	2	"	a	"	5	"
Masonry	3	"	a	"	4	"

The course in steam was given by Professor Anthony to twelve Juniors.

The methods of teaching the subjects named have varied according to the character of the work. When close, hard study was necessary for the mastery of principles, mechanical and mathematical, the text book has been followed pretty closely ; accompanied as has been desirable with notes and examples.

Courses requiring only a fair amount of mental effort were taught by lectures, text-books and assignment of special subjects for study ; each student having his subject well prepared, presented it before the class in the form of an address.

Each Senior presented an accepted graduating thesis.

The Sophomore and Junior work in Civil Engineering was in charge of Mr. Frank B. Sanborn who was appointed to fill the vacancy made by the resignation of

Assistant Professor Daniels. In addition to the tabulated list of courses given herewith, Mr. Sanborn also gave the course in Lettering.

<i>Subject.</i>	<i>Class.</i>	<i>Term.</i>	<i>Hours per week in Class Room and Preparation</i>
Surveying	16 Sophomores	1	5
	13 "	2	4
Topography	7 Juniors	1	5
	4 "	2	6
Sanitary Engineering . .	10 Seniors and Juniors	2	9
Mechanical Laboratory . .	14 Juniors	2	2

The work comprised in the above courses is as follows :—

Sophomore Surveying. Field practice ; leveling, measurement of areas, of volumes, problems requiring original methods. Office work ; computations, plotting use of pantograph, planimeter, care of instruments.

Junior Topography. Field practice ; triangulation, solar observations, north and south line, stadia measurements, contours, hydrographic surveying, quantity of flow in a river, horse-power of a canal, plane-table survey. Office work ; careful computation, adjustment of observations, plotting.

Sanitary Engineering. Merriman's Sanitary Engineer, 120 exercises and problems. 100 to 150 note-book pages of solutions and notes from engineering books and magazines. Lectures, recitations, visits to engineering works ; one thesis by each student.

Mechanical Laboratory. Tests of cement, tension of iron and steel, compression and cross-bending of wood, efficiency of hoisting gears, stresses in derrick, deflection and strength of a cantilever, and similar problems.

In order to equip the classes properly for the laboratory and field work of the coming year, an expenditure of at least five hundred dollars is required.

DRAWING AND MECHANIC ARTS.

No important changes have been made in these courses during the past year. The need for a regular assistant in the department of drawing is becoming very apparent and we can scarcely hope to defer such an appointment for more than one year. The language of the engineer is largely a graphic one, and this department is so closely allied to all of the scientific courses as to involve ever increasing labor on the part of the instructors.

Neither can assistance in the shop courses be long deferred, for it should be remembered that the work is largely individual, the hours long, and much preparation required on the part of an instructor. Moreover the project work carried on by the Senior engineers involves much of the time and thought of the instructor.

The courses given in this department are tabulated as follows :—

<i>Subject.</i>	<i>No. in Class.</i>	<i>Term.</i>	<i>Term Hours.</i>	<i>Instructor.</i>
Freehand Drawing	14	I	I	Anthony
Technical Sketching	14	I	I	"
Lettering	14	I	I	Sanborn
Elementary Mechanical Drawing . .	18	I & 2	3	Anthony
Descriptive Geometry	16	2	4	Anthony
Mechanism	15	I	2	Anthony
Elementary Machine Drawing . . .	11	2	3	Anthony
Advanced Machine Drawing	13	I	2	Chase, C. H.
Machine Design	11	2	I	Anthony
Advanced Machine Design	2	2	2	Anthony
Carpentry and Turning	11	I	2	Chase, C. H.
Moulding and Pattern making . . .	11	2	I	Chase, C. H.
Forging	15	2	I	Chase, C. H.
Vise and Machine tools	10	2	2	Moore
Senior's Project Work	4	I & 2	3	Chase, C. H.

ELECTRICAL ENGINEERING.

The teaching work in the Department of Electrical Engineering is exhibited in the following table :—

<i>Classes.</i>	<i>Term.</i>	<i>Term Hours.</i>	<i>Instructors.</i>	<i>Description of Work.</i>
19 Sophomores	2d	3	Mr. H. G. Chase Prof. Hooper	Laboratory : Quantitative Experiments in Mechanics, Sound, Light, and Heat.
14 Juniors	1st	3	Mr. H. G. Chase	Recitations : Electricity and Magnetism.
18 Juniors	1st	2	Mr. H. G. Chase	Laboratory : Electrical Tests and Measurements.
16 Juniors } 2 Grads. }	2d	2	Prof. Hooper Mr. H. G. Chase	Laboratory : Electrical Tests and Measurements.
11 Juniors } 2 Grads. }	2d	2	Prof. Hooper	Electrical Calculations.
6 students	2d	3	Mr. H. G. Chase	S. P. Thompson's Elementary Lessons in Electricity and Magnetism.
2 Seniors } 12 Juniors }	2d	3	Prof. Hooper	Recitations : Thompson's Dynamo Electric Machinery.
9 Seniors	1st	4	Prof. Hooper	Recitations : Fleming's Induction of Currents.
9 Seniors	1st	3	Prof. Hooper Prof. Anthony Mr. G. H. Chase	Laboratory : Advanced Measurements, Thesis Work. Construction of Electrical Machinery.
3 Seniors	1st	3	Prof. Hooper	Alternating Currents : Mathematical Treatment.
8 Seniors		3	Prof. Hooper	Recitations : Thompson's Polyphase Currents.
9 Seniors	2d	3	Prof. Hooper Prof. Anthony Mr. C. H. Chase	Laboratory : Thesis Work : Construction of Electrical Machinery.
8 Seniors	2d	3	Prof. Hooper	Electrical Topics: Lectures by Students on selected subjects.
5 Students	2d	3	Prof. Hooper	Theory of Magnetism.
1 Graduate	year	30	Prof. Hooper	Advanced Studies: Investigations in the Laboratory.

During the winter the reconstructed Gymnasium was wired and equipped with the equivalent of about one hundred and seventy-five sixteen-candle-power incandescent lamps.

Incandescent lamps were also installed in the rooms on the upper floor and in the halls of the library. All of this work was done largely by engineering students under the direction of Prof. Hooper.

At the close of the college year the department vacated its old rooms on the upper floor of Ballou Hall for its new

quarters in the Robinson Building. The Trustees have made a generous and sufficient appropriation for furnishing the latter building, but a very much larger sum is needed for increase of equipment. Probably no department of scientific work requires so large an assortment of expensive apparatus as electrical engineering. Hitherto, want of space has limited the equipment that we could advantageously employ. Now, however, no such limitation exists and it is earnestly to be hoped that means may be found for furnishing the department with an adequate equipment of modern apparatus.

PHYSICS.

Physics 1 started with 102 members and closed with 90. This for the whole year.

Physics 6 for 1st term had	30	members.
Physics 7 for 2nd term	24	"
Astronomy 1st term	30	"
Telegraph and telephone lectures	8	"
Physics 2 for 2nd term had	4	"

A good degree of interest has been kept up and it is hoped thoughtfulness secured concerning all the subjects. A few failed to do what was required, and such lost their record for their time, but there are always such. It does not indicate lack of ability, only a lack of a special kind of ability and pressure on such students rarely has much educational value. Perfunctory work, in the opinion of the Professor, has little educative value, while cheerful work has high value. The work was carried on in the old crowded quarters under many disadvantages for student and teachers. These will be remedied in part in the new quarters in Robinson Hall.

CHEMISTRY.

The advanced courses in Inorganic and Organic Chemistry, in charge of Professor Michael, were attended by three and four students respectively.

Dr. Leighton gave the same courses on Crystallography and on Organic Chemistry as in the previous year, which were elected by four students in the former and six in the latter course. In the organic laboratory two students took course 14, five course 15, and one course 16. The quantitative laboratory and gas analysis were in charge of Dr. Wilson, and eight students pursued a course of work in Quantitative Analysis while six studied Gas Analysis. The degree of B. S. in Chemistry was given to Mr. W. T. Conn, whose thesis embodied several original investigations, which have since been published, and are mentioned below. Mr. A. B. Lamb was granted the degree of A. M. for work done in Biology and Chemistry. The titles of the researches done during the past year are as follows :—

1. A. Michael : On Certain Laws and their Application to Organic Chemistry. Second Menograph on the Subject. Published in the Journal of Practical Chemistry.
2. A. Michael : On the Synthesis of Sodiumacetacetic Ester, and the Formation of Tetrarings by means of Sodium. A long Menograph, which was published in the Journal of the German Chemical Society.
3. A. Michael and V. L. Leighton : On the Addition of Hypochlorous Acid to Isobutylene, and Hydrochloric Acid to Isobutylene oxide.
4. A. Michael and V. L. Leighton : The Addition of Hypochlorous Acid to unsaturated monobasic, fatty Acids.
5. A. Michael and F. O. Wilson : On Hexylenechlorhydrine.
6. A. Michael and F. O. Wilson : The Decomposition of Mixed Ethers by Hydriodic Acid.
7. W. T. Conn : On Chlorine Heptoxide. Published in the American Chemical Journal.
8. W. T. Conn : The Behavior of Iodine towards Chlorine Heptoxide and Perchloric Acid. Published in the American Chemical Journal.

Under Professor Durkee, forty-one students, including four women, began Chemistry 1. Thirty-six completed the course. Thirteen were engineers. The others came from the science and literary departments of the College. For lectures, the whole class met the Professor in charge

one and one-half hours each week during the year. For laboratory work, the class has been divided into three sections; each section has received instruction from the Professor three hours a week for the year. Remsen's Inorganic Chemistry, Advanced Course, has been used as a textbook, in connection with the lectures, and Durkee's Laboratory Manual in the laboratory work. The recitation work has all been done in the laboratory.

Twenty-three students took Chemistry 2. This is a half-year subject, six hours a week of laboratory work. A. A. Noyes's text-book on Qualitative Analysis has been used and Durkee's Laboratory Notes.

The second term, nine men took Chemistry 3 and one man Chemistry 2. The hours per week, the text-books and methods of instruction have been the same as in Chemistry 2.

Six students took the course in the Metallurgy of Iron, two hours a week the second term. The basis of this course has been Bauerman's Metallurgy of Iron.

In addition to the above, the Professor of Inorganic Chemistry taught two special students Chemistry 4.

During the year, W. T. Conn and L. S. Murphy materially assisted in the preparation of solutions and distribution of apparatus.

BIOLOGY.

During the year courses have been conducted as laid down in the catalogue with an enrolment as follows:

Biology 1		16
" 3		8
" 4		10
" 5		4
" 6		3
" 8		4
" 9		7
Geology 2		4

Besides assisting with the work of Biology 1 Dr. Lambert conducted a class of four in the work of Biology 10.

As a whole the work of the year was performed in a satisfactory manner, and some of it was extremely good. The Professor speaks especially of the work of Biology 8 (Research). Miss S. E. Keith worked during the year upon the development of the vertebrae in mammals and brought out the fact that these structures are exceedingly complicated, some seven elements entering into the composition of each. Mr. A. B. Lamb studied the development of the muscles of the eye and has given us for the first time a clear account with adequate illustrations of these structures. Mr. Geo. F. Morton investigated the changes and shiftings in the hinder end of the body of a salamander in the early stages of its growth. All of these researches resulted in dissertations required for the master's degree. Besides these Dr. W. H. Ruddick continued his studies of the mammalian skull which, however, are not yet complete.

During the year one number of the Tufts College Studies has been issued. It was by Professor Kingsley and treats of the development of the ear bones of vertebrates. In it is brought out the fact that these structures have an exceedingly important bearing upon the much broader question of the origin of mammals.

The departmental library has continued to grow and now contains 1270 volumes and 3154 pamphlets and unbound numbers of serials. The additions for the year number 520 and were received from the following sources.

Purchase 189; Exchange 210; J. S. Kingsley 72; Dr. W. H. Ruddick 20; Professor J. P. Marshall 14; Pres. E. H. Capen 6. Mr. E. Ginn and transfer from College Library 2 each, Professors J. W. Sprengel and A. S. Packard, the Essex Institute, the Smithsonian Institution, and the University of Minnesota, 1 each.

The Professor refers in the highest terms to the assistance received from Dr. F. D. Lambert. As stated above he carried on the work of Biology 10 throughout the year. During the first term he assisted with the laboratory work

of Biology I ; during the second term he took entire charge of the work, delivering the lectures and conducting the work of the class in the laboratory. Besides this he was of great assistance in preparing material for the classes, a work requiring a great amount of skill, patience and time.

MODERN LANGUAGES.

The work in the department of Modern Languages is presented in detail in the subjoined table. It is, however, impossible to exhibit the extent and character of the collateral reading, for which the recent large increase in the departmental library now affords an ample opportunity.

<i>Courses.</i>	<i>Instructors.</i>	<i>No. in Class.</i>	<i>Work Done.</i>
German 1	Prof. Fay	42	Joynes-Meissner Grammar, Parts I and II; Altes und Neues; Das Abenteuer einer Neujahtsnacht.
German 2	Prof. Fay	19	Joynes-Meissner Grammar, Part III; Die Schwiegersohn; Die Freiherren von Gemperlein; Seume's Leben; Minna von Barnhelm.
German 3	Mr. Demeter	25	Zwischen den Schlachten; Irrfahrten; Der Tausendmarkschein; Minna von Barnhelm; Hermann und Dorothea.
German 3b	Mr. Demeter	8	Harris's German Composition; Poll's Composition, Vol. II.; Spanhoofd, Essentials of German Grammar, German Synonyms.
German 4	Prof. Fay	27	Wallenstein; Maria Stuart; Gustav Adolf in Deutschland; Egmont (Winkler's Edition, with collateral reading); Correspondence of Goethe and Schiller (Robertson's Edition); Lyrics of Goethe and Schiller.
German 5	Prof. Fay	13	Nathan der Weise; Emilia Golotti; Laokoon; Götz von Berlichingen; Tasso; Iphigenia auf Tauris; Faust, Parts I and II.
Italian	Prof. Fay	4	Grandgent's Grammar and Composition; Bowen's Reader; Maffei, Merope; Dante, Inferno and selections from Purgatorio.

French 1	Prof. Lewis	18	Edgren's Grammar, Rollins's Reader; Mêlé-toi de ton Métier; Le Chien du Capitaine; La Main Malheureuse.
French 2	Prof. Lewis	36	Macmillan's French Course (second year); About, Le Roi des Montagnes; Sarcey, Le Siège de Paris.
French 3	Prof. Lewis	41	La Guerre de l'Indépendance en Amérique; Super's Readings from French History; Polyeucte; Mithridate: Britannicus; Andromaque; Le Lutrín; L'Avare; Chardenal's Advanced Course.
French 4	Prof. Fay	10	Crane's Société Française au XVIIe Siècle; Les Précieuses Ridicules; Les Femmes Savantes; Cyrano de Bergerac; Le Misanthrope; Le Cid; Selected letters of Mme. de Sévigné; Bernardin's Morceaux choisis des classiques français du XVIIe Siècle; French Prose of the 17th Century (Warren); and much collateral reading.
French 5	Prof. Lewis and Prof. Wade	14	Crane's Le Romantisme Français, with collateral reading on the Romantic Movement. Pailleron's Le Monde où l'on s'ennuie, Causeries de Sainte-Beuve (G. N. Harper); Tales of Coppée and Maupassant (Cameron); Mellé's Lemaître; Van Daell's Bourget; Leune's Difficult Modern French; Ploetz's Nouvelle Grammaire Française, used for review and reference.
French 4b	Mr. Demeter	?	Fasnacht's First Course in Composition; Ploetz, Cours Gradué et Méthodique de Thèmes Français, Nouvelle Grammaire Française.
French 6	Prof. Fay	4	Demogeot, Histoire de la Littérature française; Brunetière, Manuel de l'Histoire de Littérature and Evolution de la Poésie lyrique; Lamartine's Jocelyn; Caro's George Sand; François le Champi; Indiana; three essays of Sainte Beuve, two being upon Balzac. The members of the class read different novels of Balzac, writing a critique upon the same.
ENGINEERS.			
French 160	Mr. Earle	4	Grandgent's Short French Grammar; Super's French Reader; Sans Famille.
French 161	Mr. Earle	10	Grandgent's Short French Grammar; La Guerre de l'Indépendance en Amérique: Le Tour du Monde en

French 162	Mr. Earle	10	Quatre-vingts jours, Scènes de la Révolution Française ; La Question d' Argent, Elementary Scientific French Reader (Davies) ; L' Année Scientifique et Industrielle, 1898. Le Siège de Paris ; Michel Strogoff ; La Tulipe Noire ; Cinq-Mars ; L' Oncle et le Neveu ; La Mère de la Marquise ; Elementary Scientific French Reader (Davies) ; L' Année Scientifique et Industrielle. 1898.
Spanish	Mr. Earle	7	Matzke's First Spanish Readings, Alañon's El Capitán ; Veneno (Ford) Vel dés José (Davidàon) ; Stevenson's Plagiade (Sellén) ; Spanish Grammar (Edgren).

ENGLISH.

In the department of English the absence of Professor Shipman was distinctly felt. The amount of work done, however, was as great as usual, and the number of students was fully equal to the average. The burden of Professor Shipman's work was divided mainly between Assistant Professor Whittemore and Mr. Thompson. A detailed statement follows, the numbers of the subjects corresponding to those in the catalogue of 1899-1900. The first six numbers are appropriated by the classes in composition, the students at first concentrated in a single required course being afterward distributed among the several options offered. With the exception of English 23, which represents a successful experiment in the study and writing of short stories, the number following English 7 indicate classes in literature, in many of which written essays or theses are required. The subject appearing as English 9 was given by Assistant Professor Whittemore for the first time, and consisted in a study of lyrics of the sixteenth and seventeenth centuries. Mention should be made also, in a summary of Professor Whittemore's work, of an illustrated course of lectures upon the Fine Arts of the Middle ages and the Renaissance,—two hours a week for the year,—the course being attended by twenty-one students. The work in advanced Anglo-Saxon was pursued by all the members of the class that had begun the subject the preceding year, and consisted of reading from the Wülcker-Grein text, lectures and research.

<i>Subject.</i>	<i>Term Hours.</i>	<i>Instructor.</i>	<i>No. in Class.</i>
English 1	1 (first term).	Mr. Thompson.	26
English 1	2	Mr. Thompson.	36
English 1b	3 (second term).	Mr. Thompson.	21
English 2	6	Asst. Prof. Whittemore and Mr. Thompson.	61
English 3	2 (first term).	Asst. Prof. Whittemore.	15
English 4	2 (first term).	Mr. Thompson.	13
English 6	2 (first term).	Mr. Thompson.	2
English 6	2 (second term).	Asst. Prof. Whittemore.	8
English 7	2	Prof. Maulsby.	3
English 9	2 (second term).	Asst. Prof. Whittemore.	45
English 11	2	Mr. Earle, Prof. Wade, Prof. Knight, Prof. Maulsby. }	30
English 12	6	Prof. Maulsby.	25
English 15	6	Asst. Prof. Whittemore.	34
English 16	3	Prof. Maulsby.	13
English 19	6	Prof. Maulsby.	{ 20 (first term). 15 (second term).
English 21	3 (first term).	Mr. Earle.	4
English 22	1 (second term).	Mr. Earle.	1
English 23	2 (second term).	Asst. Prof. Whittemore.	10
English 25	6	Prof. Maulsby.	3
English 26	3 (first term).	Mr. Bailey.	10

In addition to the work here summarized, one graduate student, Miss W. M. Nash, made a survey of American writers, and wrote an extended thesis on "Americanism in American Literature." In the early part of the year, by authority of the Trustees, the first number of a second series of Tufts College Studies was published: "The Growth of Sartor Resartus, by D. L. Maulsby." The work in aid of the American Dialect Society continues, about one hundred more words and expressions not recognized by existing dictionaries having been discovered in the writings of Cotton Mather by interested students.

ORATORY.

In the department of Oratory, thirty students followed the introductory course of exercises and practice. Seven analysed speeches of American authors, and then made and delivered speeches of their own; and two students carried the work of oratory into the realm of debate. From the Divinity School, eight students practiced Bible and hymn reading, and extemporaneous speaking. Riddle's Modern Reader was used as a book of selections of a dramatic sort by six students, the same book serving also in the elementary class. Besides the usual prize readings in June, and several other public exercises, there was given in the gymnasium, February 27, a presentation of the pageant play, "Prima Pastorum," from the Towneley series of guild plays. Some pains was taken to make the presentation historically accurate. A large audience attended, composed in part of representatives of neighboring colleges.

MUSIC.

In the department of Music the following subjects were given: Music 1, Harmony; Music 2, Counterpoint; Music 4, General History; Music 5, Advanced Work in History.

In all except the last-named, the subject matter of these courses was much the same as in previous years. In

Music 5, the works performed at the concerts of the Boston Symphony Orchestra were made special subjects of historical study, and extensive use was made of German and French sources in our own library and elsewhere.

The number of students twenty-four in all—taking the above subjects was rather smaller than in previous years. But a new departure, the formation of a chorus, enlisted the interest of over sixty students in the study of a programme of choral works which came to performance early in June. The programme included a modern English cantata, several part-songs, the eight-part *Crucifixus* of Antonio Lotti, and Mendelssohn's "Hear my Prayer." With the exception of the solo part in the Mendelssohn motet, all the parts were sung by students. This choral study was not strictly within the work of the department. The chorus was organized rather as a student enterprise than as an educational undertaking. But the result was quite in line with the department's purposes; for the chorus was found to be able to address itself to tasks of choral performance distinctly difficult, in a way which not only edified the auditors but also counted greatly for the development of musical knowledge and taste on the part of the chorus itself.

HISTORY.

The following table gives the statistics of the department for the year.

No.	Subject.	Instructor.	Hrs.	Reg.	Passed.	Failed.	Dropped.
1	Gen. European H. (lects., reading, and exams.).	Start.	6	43	23	5	15
2	European H. (special periods. Individual work).	Start.	6	16	15	1	
3	English H.	Bailey.	6	16	14*		
5	United States, pol. and const.	Start.	6	5	4	1	

* Two students took only the first half year's work, receiving credit for three term hours.

The very unsatisfactory record of History 1 is due to the unusual number of poorly prepared special students who entered the class, several of them being men whose main interest was not in the class room. The presence of a considerable element of this kind affected unfavorably the work of the whole class. History 3 was conducted by Mr. Harold C. Bailey, A.M., of the Graduate School of Harvard University, under the supervision of the head of the department.

History 2, given for the second time this year, again proved its interest and usefulness. It is a satisfactory and profitable course for students of industry, interest in the work and initiative. It cannot be recommended for those who do not answer these requirements. In other respects than those mentioned the work of the year requires no especial comment.

Professor Start gave summer courses to two students, with most satisfactory results. The work done was of advanced grade and excellent quality.

As the present year terminates the connection with the college as a teacher of the present head of this department it seems proper at this time to look back at the results of the eight years of work which have created the department and brought it to its present condition. The department of History was opened in the year 1892-93, in charge of an instructor, and until the establishment of the Dickson Professorship of English and American History during the past year there has been no appointment above the grade of assistant professor. It began practically without any equipment. During the first half year it enrolled a class of eight students. It was necessary to secure from Faculty and students recognition of its importance as an integral part of the college work. It now enrolls yearly its due proportion of students, while the cordial and sympathetic attitude of the Faculty has been of the greatest assistance in the task of organizing and developing its work and its place in the curriculum.

Especially has the wise counsel of the President of the College been strengthening and helpful in hours of perplexity and difficulty. This eight years of constructive work covers a period of change and rapid progress in the teaching of history in schools and colleges, and in this movement the department of History in Tufts College has borne its full share, a fact which has been fully recognized in educational circles. In the movement for adequate entrance requirements in history, with its corollary of closer relations with English high schools, Tufts College has taken a place in the forefront of New England Colleges. The work of the department has been largely influenced by the trend of these larger movements, with which it has kept in close touch. For four years the programme underwent radical revision annually in the search for a plan which would be systematic, scientific in arrangement, and would give to our students the most ample opportunities possible with the limited equipment and teaching force. This has been found and, with slight modifications to meet changing conditions, has worked admirably. The equipment of the department, while still lacking much, has materially improved. The historical division of the library, formerly so woefully deficient, and still far from equal to the continually increasing demands, has made great strides forward and now offers a fair working basis for undergraduate classes in most of the principal historical fields. There is still a great need here and will be, while the present astonishing output of important historical material of various kinds continues. But the most pressing need of the department in the way of equipment is a set of the best physical and political maps of the world and all of its divisions. No man should be asked to teach history today without such provision being made for him. The expense would not be great and chairs are not more necessary in a modern historical class room.

The results of the past eight years are full of encouragement for the future of the department. Needed for so

many years, it has now taken its place on a plane with the other leading departments of the College, and it is now possible for it to develop with enlarged facilities a greater usefulness.

PHILOSOPHY.

Experience in previous years determined the department to offer its courses only to students who had had at least one year of college training, and to others whose maturity of mind proved them fitted for reflective work. By such limitations certain expected and satisfactory results have been reached. In the first place the numbers in the elementary classes were not so unwieldy as they had been during the previous year. This is indeed not an unimportant result. In philosophy, as in no other subject, instruction must be individual with beginners. Philosophy is not so much a world that is new to the student; but rather—and herein lies its difficulty—it is a new way of looking at his old world. The department feels more and more how elementary its work must be with beginners and especially individual with those who march at the rear of the class. The task of the teacher of philosophy as to his individual instruction is accomplished when the student is fired by the universal humanity of the subject.

The new limitations set by the department upon the option of the student have had the effect of materially raising therefore the standard of the class work. In previous years the students in the advanced classes have almost invariably been of high scholarship. Now the character of the elementary classes has become relatively as high.

The following table shows the registration in the several subjects given during the year.

<i>Course.</i>	<i>Instructor.</i>	<i>Registered.</i>
Philosophy 1.—History of Philosophy . .	Prof. Cushman	30
“ 2.—Psychology	Prof. Cushman	29
“ 5.—Ethics	Prof. Cushman	6
“ 6.—Ethics, Practical . . .	Prof. Tousey	10

Philosophy 7.—Philosophy of Religion	Prof. Knight	8
“ 8.—Metaphysics	Prof. Cushman	6
“ 11.—Reading of Kant	Prof. Cushman	8
		—
Total		97

The department has felt keenly the absence of Professor Shipman, who has been taking a year's rest abroad. Philosophy 3 and 4 were therefore not given and the students were permitted to take Logic with Professor Tousey. The work in Philosophy 1 and 2 has been the same as in former years. The instruction in Philosophy 1 is by lectures upon the history of thought, the material being given in the several treatises on the subject, especially Windelband's *Ancient Philosophy* and Royce's *Spirit of Modern Philosophy*. The work in Philosophy 2 is restricted by the small amount of apparatus for illustrating the subject. It would be hardly desirable for undergraduates to attempt for themselves original research in psychology. Nevertheless the instructor ought to be supplied with sufficient apparatus to make his work graphical enough to give an understanding of the right methods to the students.

The class in Ethics, Philosophy 5, reviewed the main ethical problems by means of lectures with Mackenzie's *Ethics* as a guiding text-book. The instructor in this course is furthermore trying to show the intimate relations of philosophy on its ethical side to literature. To this end the latter part of the course is used in ethical criticism of any literature in which the students happen to be interested. This year such ethical literary criticism was directed upon the characters in Ibsen's *Little Eyolf*, Meredith's *The Ordeal of Richard Feverel*, Besant's *The Changeling*, and Thackeray's *Vanity Fair*.

The course in Practical Ethics, Philosophy 6, was limited to the second term, three hours per week. It engaged the Middle Class of the Divinity School as a prescribed subject, and six members of the College of Letters as an elective.

At the outset there was a brief discussion of the ethics of belief; and a studied attempt to synthesise the findings of the previous course in theoretical ethics with a special view to developing a consistent working theory of morals.

In the treatment of the practical problems of the individual and social life which followed, there was a persistent aim to correlate them with fundamental ethical principles on the one hand, and with concrete fact and actual experience on the other. The professor discovers, as he thinks, a growing interest among students in this class of inquiries.

The class in the Philosophy of Religion, Philosophy 7, had four hours a week the first term. The class is composed mainly of divinity students but is open to students in philosophy in the College provided they have, as in Philosophy 6, taken courses 1 and 2. This is a study of the fundamental rationale of religion. The method employed by the professor is historical and inductive to the end of reaching a scientific view of the Deity, His attributes, His relations to the universe, and the attitude of of man to Him.

In Philosophy 8 the work has not materially changed from previous years. The several theories of reality are reviewed—realism, mysticism, idealism and skepticism—and the special problems under each are critically examined. The end and aim of the course is not refutation of any doctrines but the more practical one of getting a healthy reaction in the mind of the student so that he may systematize his own beliefs.

The class in Kant, Philosophy 11, read the principal portions of the *Critique of Pure Reason*, Watson's translation, and the course was partly of lectures upon Kant's philosophical inheritance and environment, partly of lectures upon the text as well as discussions of the same in the class.

The Philosophical Conference held two meetings during the year, both of which were largely attended. The first meeting was addressed by Mr. W. A. Rodman, secretary

of the Metaphysical Club of Boston, on Mental Science; the second by Rev. Irving Tomlinson of Concord, New Hampshire, on Christian Science. This is the fourth year of the existence of the Conference and the addresses given before it have been on a large variety of themes.

POLITICAL SCIENCE.

The work in Political Economy under Professor Metcalf for the year consisted of two full courses.

Course 1 was designed to give a general view of the subject for those who sought simply a general knowledge of economics, and also to prepare students for work in the advanced courses. The work began with a study of the fundamental principles of production, distribution, exchange, money and international trade, which occupied the first term. The topical method was used, and the course was conducted partly by oral discussion, partly by lectures. Large parts of the Principles of Political Economy by Mill, Marshall, Walker, Ely and Bullock were read and discussed, and frequent written tests showed whether or not the students were following the prescribed readings in a systematic and intelligent manner. Students were taught from the beginning that a reasonable acquaintance with the extensive and rapidly growing field of economic literature is indispensable to the formation of unbiased opinions.

In the second term, which was devoted almost entirely to lecture work, the course considered the application of economic principles to some of the wider aspects of industrial society.

Fifty-three students, forty men and thirteen women, from the College of Letters, the Engineering and Divinity Schools, registered in this course.

The object in Course 2, Modern Economic History with special reference to the economic history of the United States, was to give a general view of the economic development of modern society. Attention was first devoted to

the " Industrial Revolution " in England, and then the industrial history of the United States was used to show the manner in which economic principles are illustrated. The economic aspects of slavery, the many problems growing out of the rapid development of the means of transportation, the tendency to concentration and combination of labor and capital illustrate the nature of the topics studied.

The work in this course was conducted by lectures, and topical references to the literature on the subject matter of each lecture were given. Each member of the class was required to present in each term a thesis bearing upon some special topic connected with the course. Almost all this special work was carried on in the Boston libraries. The class consisted of ten members.

During the college year one hundred and eleven volumes were added to the library facilities in the divisions of Government and Economics. More than three-fourths of these books were the gift of Mr. Joseph G. Ray, 2nd. The Department of Political Science is greatly in need of more books and scientific periodicals. Students doing advanced work in this department of the College are obliged, to a considerable extent, to carry on their researches in the Boston libraries.

The President gave the courses known as Government 2 and Government 3, which were taken by 17 and 21 students respectively. The former of these courses deals with those jural conceptions which are initial and fundamental in human society. It is intended also to show the growth of these conceptions, step by step historically, until we reach the highly developed ideas on which a great and complicated organism, like the Roman Empire, is based. Only the more mature students, and those, too, of special aptitude in governmental studies, are capable of getting a clear and comprehensive knowledge of the subject. It is to be regretted that students in the earlier stages of their college course are inclined to elect this study so often. Such persons can derive but small benefit from it. But

there are always a few in every class who do good work and attain satisfactory results. Government 3, International Law, is less abstruse, and it has certain phases, very prominent during these later years, which invest the study with peculiar interest. Students generally pursue the subject with zest, and the present year has proved no exception to the rule.

Assistant Professor Start gave, as in years past, a course in Political Science and Comparative Constitutional Law, using the work of Burgess as a textbook, with copious outside references and a study of the text of several of the more important modern constitutions. Six men took this subject three hours a week for the year.

THE COLLEGE PULPIT.

As was intimated in the report of last year the order of Sunday worship has been very much enriched. Owing to the indefatigable and efficient efforts of Professor Lewis, a mixed choir of, at least, two dozen voices, has been gathered and trained to render most acceptably, church music of the best quality. The singing of this choir has become a feature of our Sunday service and has already attracted considerable attention and awakened a fresh interest in church attendance both among students and the general public. Along with this revival of interest in the home worship of Sunday there appears to be a diminution of interest in the regular morning chapel service. There has been a decided falling off in the attendance recently, due in part, perhaps to the large percentage of day students, who, on account of the running time of the morning trains of the Boston and Maine Railroad are unable to reach the College in proper season. It may be found necessary, in order to meet the changed conditions, to appoint a different hour of the day for the chapel service when all the students of the College can find it convenient to be present. Every effort should be put forth to preserve and make affective an institution of so much importance in the characters

of young people as the daily chapel. Besides the advantage arising from religious culture, the incidental value of the daily assembling of the entire body of students, while yet the number is not so large as to render it impracticable, is very great. If it were possible to add to this service some of the musical features which have already proved so beneficial on Sundays, that, no doubt, would attract and inspire.

The reports of the Library, the Barnum Museum, the professional schools and other departments of instruction are transmitted herewith.

ELMER H. CAPEN.

TUFTS COLLEGE,
September 19, 1900.

THE LIBRARY.

THE LIBRARY.

To the President :

I herewith submit the Report of the Library for the year 1899-1900.

Accessions from September 1, 1899 to September 1, 1900.

	<i>Vols.</i>	<i>Pams.</i>	<i>Nos.</i>
Total	2,904	2,150	1,771
Purchased	160	17	1,226
Donations	2,605	2,133	545
Binding	139		
Yearly average accessions for five years . . .	1,689		
Total number of volumes in the Library . . .	41,975		
“ “ “ pamphlets in the Library . . .		28,839	
Circulation for home use	6,840		
“ among Professors	986		
“ “ Students	5,854		

<i>Character of Circulation.</i>	<i>per cent.</i>
English prose fiction	8.38
History and Biography	13.33
Poetry, drama and literature	23.83
Arts and sciences	13.60
Theology and philosophy	3.98
Law, politics, political economy and sociology . . .	6.87
French, German, Greek and Roman literature . . .	9.75
Philology	1.15
Geography, education and miscellaneous	2.47
Periodicals and pamphlets	16.64

The accessions for the past year have been more than for a number of years, but many of the volumes have been received by donations from private libraries, and it is safe to say of most donations of that kind that one third of the books will be duplicates. There are however, many valuable acquisitions among the donations, and besides

the donors I mention below, there are many others included in "Special Contributions" and "Shipman Fund."

From the Library of the late Dr. Miner, the second President of the College, we received seven hundred and sixty volumes, the gift of Miss M. Louise Field. Most of the books were placed in Miner Hall. In the donation was a nearly complete set of Littell's Living age and with them we completed our set and had it bound, up to July, 1900. Mr. Edwin Ginn gave the Library seventy-nine volumes of his firm's publications. The Rev. C. H. Fay, D.D., the father of Professor Fay, gave us fifty-one volumes of French literature. Mr. C. J. Mackenzie completed the works of Sainte-Beuve, twenty-two volumes. From the class of 1900 in addition to last year's gifts eighty volumes of works on art. Mr. Wm. B. Denison gave us twelve volumes for the Latin department. There were purchased with the donation of J. G. Ray, 2d. seventy-seven volumes and with the donation of W. E. Parker twenty-one volumes. Received from the library of the late Rev. J. O. Skinner two hundred and forty-three volumes and from the estate of the late Charles Whittier one hundred and sixty-three volumes. Among the Whittier books were the first thirty-five volumes of the Scientific American and the autograph edition of Charles Sumner's Works.

With some money collected by Professor Shipman and named by him "Special Contributions" were purchased one hundred and seventeen volumes, and with money raised among the Alumni and other friends, which it was decided to call the "Shipman Fund", were purchased eighty-two volumes.

During the winter an offer was made to take all the duplicates we cared to dispose of, and in exchange to give certain periodicals and other publications that we desired. A few of the exchanges have been made but the bargaining is still incomplete, and there are many other orders still waiting. We have exchanged our old edition and com

pleted as far as published, the new edition of the American Statesman Series, paying cash for the difference.

Shortly before the death of the Rev. C. W. Biddle, D.D. a note was received, written for him, offering to the library a portion of his books. In that way seventy-nine volumes were received. After the death of the Rev. O. G. Petrie, his widow sent a number of her husband's books to the library.

There have been purchased under the direction of Professor Bolles fifty-two volumes of works on English history and kindred subjects. These were the gift of Mr. E. R. Holden of New York.

For the Librarian and Assistant the past year was a very busy one, for in addition to the regular Library work of waiting on students, and entering, cataloguing and caring for the books, there were a great many changes made in the Library. The contents of two rooms in the second story were assorted and removed to the attic story occupying two rooms on that floor. The Ryder Library was moved down stairs, and a good many of the Frothingham books also. In the room formerly occupied by the Ryder Library are now kept the works on fine arts and music, and one case is kept for books, etc. that need to be under lock and key. The remainder of the shelving is for reserved books in English literature. The Ritter Library, formerly occupying a room in the second story, was moved to the suite of rooms assigned to the music department in the Gymnasium. That enabled us to set apart a room for the Greek and Latin department. The Frothingham room was assigned to American history, and the other two rooms to political science and history. In addition to our other work, a shelf list on cards has been begun and considerable progress made.

During the fall of 1899 it was decided to try the experiment of opening the Library evenings, and from the 21st of November to the 29th of March, it was open four evenings a week, but did not meet with much patronage, the attendance being very small.

The general use made of the Library is increasing, and it must needs be so, because so many books are reserved and kept for class work. There has been a marked increase in the number of books used in political and social science, and also in foreign languages, and a slight increase in the circulation of works on the arts and sciences, while some others have a smaller per cent.

Respectfully,

HELEN L. MELLER.

TUFTS COLLEGE,
September 19, 1900.

THE DIVINITY SCHOOL

REPORT OF THE DIVINITY SCHOOL.

To the President :

This report, first of all, ought to take note of the fact that, at the present time, one of the School's most interesting prerogatives lies in the direction of negative care in behalf of the College, and of the specific ministry which the School is set to serve. Of the thirteen applicants to enter the School at the beginning of the year, but three were received, one to the senior work, one to the course of study prescribed for A.B.'s, and one for the four year's course. So far as we know the history of the other applicants, two entered College for the first degree in arts, two entered another theological seminary, and the others, if they do not take the A.B. course in some college, will give themselves to ampler preparation for our distinctively theological training. Extraordinaries excepted, the men who do not enter the School next year, will come to us some future year, after the accomplishment of the college courses, or after wider preparation than is afforded by our best high schools and academies. The principle at which these facts hint seems the wise one for the Divinity School of this College, in view of the fact that the School is organically part of the College, and so located that it is affected by the academic spirit, and all of the inspiring ambitions of college life.

Another fact which supports the principle in the conduct of the School is the growing demand on the part of the Churches. The call is for men of scholarly attainments, for men whose learning, general and specific, will secure the respect of educated hearers, and of the wider constituency in the town where the parish in charge is placed. This demand from the parishes appears in vari-

ous forms ; in letters from the trustees of the churches, who distinctly state their needs, and plead for men who will be centres of influence among "our most thoughtful people" ; in letters from the clergy who are urgent with regard to a persistent policy in our theological seminaries, a policy so shaped that the future of the church will be assured through intelligent advocacy of religion by which its vocation is widened, ennobled, and life elevated over its vast area ; and by the almost eager willingness of our laity to give money for the education of men who recognize how important a factor in preparation for the ministry time is, and are willing to give years of solid work, in college and Divinity School, that they may honor the Christian calling, and bring to the largest service for the good of man, a trained intelligence, true moral reserve, and those graces and powers of soul, which are fostered amid the pauses of life when one waits for the providential occasion, the gathered impulse, and the growing religious motive.

Another part of the School's growing care, and interesting prerogative, is in the line of what may be called Divinity School extension. Some idea of the extent, if not importance, of this work is suggested by the fact that through its Dean during the present year, the School was in correspondence with forty-eight clergymen, and nine parishes, with regard to matters of individual and social importance. The School thus keeps in touch with preachers many of whom are at work in far-away places ; with parishes that have come to front some serious problem ; with the officers of the Church, especially with those whose work lies near the heart of denominational power, namely, the committees of Ministerial Fellowship. The School has gladly welcomed this wide and various correspondence, and counts it not only a part of duty, but a part of privilege to serve a noble brotherhood, and if it can do no more, to give, at least, the master help of sympathy to our Christian workers far and near.

The need of the School is financial endowment, that its subjects of study may be multiplied, scholarships and fellowships established, and its teaching force increased by the founding of new chairs and lectureships.

That our young men may be turned toward the Christian Ministry we bespeak the active interest of the clergy, Sunday School teachers and parents. The years of faith are surely near at hand, else all the longings of the troubled world count for naught, and the prayers of all Christians, and all well-wishers for the repose of the world in a new thought and a new life, are idle breath. No cry of today is more distinct than the cry from the low place of doubt, for a religion that will honor God's goodness and man's need. The urgency, we believe, is for those facilities and that education which the Church of Christ provides, and for that power in personality, which discipleship gives, and the Christian ministry supplies.

Again we wish to acknowledge the generous help of our Lecturers, the loyal support of the School's alumni, and the recurring gifts to our reference library from our many friends.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,
September 19, 1900.

THE MEDICAL SCHOOL

REPORT OF THE MEDICAL SCHOOL.

To the President:

Herewith is presented to you the report of the Medical School for the year 1899-1900. The year has been a period of continuous prosperity and advance, and the School is expanding and enlarging in every direction; former courses have been extended and improved; new courses have been offered; additional clinical facilities have been acquired; a new physiological laboratory has been provided; several thousand dollars worth of microscopes and other equipment have been purchased; and various permanent improvements to the building have been made. The number of students has been larger than ever before, and the building has been greatly overcrowded owing to the increase of our own numbers and to the accession of the dental students. It is probable that in the coming year over four hundred students from the combined departments will be in daily attendance at the Medical School so that the immediate completion of the new building is a matter of paramount necessity.

Changes have been made in the Faculty of the School as follows :

Dr. John L. Hildreth has been made Professor of Clinical Medicine, Emeritus. Dr. A. P. Matthews has resigned from the school to enter the Physiological Department at Harvard University. Dr. Charles G. Cumston has resigned as Assistant Professor of Surgical Pathology. Appointments have been made as follows : Dr. Horace D. Arnold Professor of Clinical Medicine; Dr. Howard S. Dearing, Assistant Professor of Clinical Medicine; Dr. Herbert Warren White, Assistant Professor of Theory and Practice of Medicine; Dr. E. C. Stowell, Assistant Pro-

fessor of Diseases of Children; Dr. Charles W. Kaan, Assistant Professor of Clinical Gynaecology; Dr. George Van Ness Dearborn, Assistant Professor of Physiology; Dr. James S. Howe, Assistant Professor of Dermatology.

In conclusion I would again improve this occasion to thank the various members of the board of instruction for their earnest and cordial support.

Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE MEDICAL SCHOOL.

Boston, Mass., September 19, 1900.

THE DENTAL SCHOOL

(FORMERLY THE BOSTON DENTAL COLLEGE)

REPORT OF THE DENTAL SCHOOL.

To the President :

I have the honor to submit to you herewith the report of the Dental School for the year 1899-1900. This period represents the first academic year of the Dental Department after its incorporation into Tufts College and is consequently an era of the utmost importance in the history of the School. The difficulties of the undertaking of the reorganization of this School and of its concentration with the Medical School were fully realized by the authorities of the College before its adoption and a plan of arrangement was decided upon by which the new Dental School should be brought into the closest possible affiliation with the Medical School. This plan necessitated the assimilation of the new School under the same administrative board as that of the Medical School ; extensive changes in the curriculum whereby equivalent or similar courses in the two schools should be brought together ; changes in the Board of instruction in those departments which were identical or similar ; re-arrangements of hours and other complex details. The difficulties of the task were greatly augmented by the fact that according to the method pursued in the curriculum of the Boston Dental College, courses of study which occupy but a single term in the Medical School were extended over a period of years in the Dental School, thus requiring that special supplementary courses should be given in these subjects to members of the Junior and Senior classes.

This laborious task of adaption has been successfully accomplished during the past year with the least possible amount of friction and with the graduation of the present Senior class the complete curriculum as decided upon will be in operation in the entire School.

The work at the Infirmary has been successfully prosecuted throughout the school year ; nearly twenty-five thousand treatments have been made, and testimonials of the most gratifying nature of the benefits which the institution has bestowed upon the poorer classes of the community have been received from several sources. It would be difficult to overstate the amount of suffering alleviated by this institution and it is earnestly to be hoped that a generous public will enable the School to extend these benefits to a still larger circle when the Infirmary is transferred to the new building on Huntington Avenue now in process of construction. The prospects of the School for the coming year are exceedingly bright, and the number of students promises to be largely in excess of the enrolment of previous years.

Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE DENTAL SCHOOL,
formerly Boston Dental College.

September 19, 1900.

THE BROMFIELD-PEARSON
SCHOOL

THE BROMFIELD-PEARSON SCHOOL.

To the President :

During the past year there have been no changes of importance either in the courses of instruction, or the equipment of the School. The courses in Mechanic Arts have been attended by forty students ; and five students have pursued the special preparatory course.

Three machines have been in process of construction as a part of the course in Mechanic Arts. Two of these, a ten kilo-watt dynamo and motor lathe, are nearly completed, and are designed to serve our needs in shop and laboratory, as well as to afford the students opportunities for the design and construction of practical machines. The third machine is a seven horse-power motor which probably will be employed to operate one of our shops.

The drafting rooms have been wired for electric lighting and are now supplied with current from our own dynamo which was designed and built at the School.

An appropriation has been made for the purchase of machine tools which were necessary to properly equip our shop. When these shall have been obtained, our course in this department will be very materially strengthened.

Respectfully submitted,

GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE,
September, 19, 1900.

THE BARNUM MUSEUM



THE BARNUM MUSEUM.

To the President :

As director of the Barnum Museum I have the honor to submit the following report for the College year 1899-1900.

During the year some little work has been done on the collections. Two or three hundred fossils have been mounted on wooden tablets for exhibition, while I have worked over and arranged in trays a considerable part of the reserve collection in the basement. The alcoholic collection has been looked over and can be reported as in good condition.

The valuable skeleton of the plesiosaur which was rapidly going to pieces has been thoroughly impregnated with melted paraffin and is now believed to be placed beyond farther danger. The janitor of the building has gone over some of the collection of mammals and has remounted several which were poorly mounted. He has also prepared several skeletons for our collection and has several others in various stages of completion.

The donations to the museum for the year have been as follows :

Dr. W. H. Ruddick, shark tooth from the phosphate beds of North Carolina ; *Lithodes maia* from Massachusetts Bay ; Human tape worm. W. T. Conn (1900) Sandstone, St. Andrews, New Brunswick ; Dr. F. D. Lambert (1894) Marine invertebrates from Casco Bay ; Mr. N. A. Cushman, a large collection of birds, eggs and nests, carefully identified. Mrs. O. A. Studley, Cannon-ball from Gettysburg ; Mr. John H. Sears, Selenite from Enfield, Nova Scotia.

J. S. KINGSLEY,

Director.

TUFTS COLLEGE,
September 19, 1900.

THE GODDARD GYMNASIUM

GODDARD GYMNASIUM.

To the President :

The students of Tufts College have shown their appreciation of the larger and more modern facilities for physical training which were offered last year for the first time in the renovated Goddard Gymnasium, by engaging in fifty per cent. more exercise than ever before. Not only in the new ball-cage and on the the running-track was this larger interest shown, but also in the work on the corrective and developing appliances. The former somewhat lax disregard of property was completely eliminated, and with commodious locker-rooms and baths, abundant facilities for the present are at hand. The season of regular class-work was postponed nearly two months by the delays on the building, but the same plan of preliminary examination of the individual was adopted, together with a charting of the measurements and recommendation of special exercises.

These latter were supplementary to class drills for all and to the games and sports which prove both interesting and wholesome to the student inasmuch as they maintain his vegetative functions in healthy condition.

Under this last head would be classed much of the training undergone for the various atheletic events engaged in.

That the Gymnasium offers excellent and often necessary preliminary training for men who specialize in athletics is commonly understood and the two departments should and do work in harmony.

Miss Carvill again took full charge of the young women, who were once more compelled to use the same gymnasium as the men with all the inconveniences thus occasioned.

The use of a portion of the Gymnasium by the department of music has occasioned not the least conflict and indeed has helped to make it a centre of student activity.

Respectfully submitted,

CHAS. C. STROUD, M.D.,

Director of Goddard Gymnasium.

TUFTS COLLEGE,

September 19, 1900.

To the President :

The women of the College were given physical examinations in October, but owing to the remodelling of the Gymnasium the class work was not begun until the latter part of February. As heretofore the work consisted of applied medical gymnastics, with apparatus and without, class teaching, and recreative games. Seventy-four women attended the classes, no class exceeding twenty in number. The classes were attended not only by the lower two classes, but many Seniors and Juniors availed themselves of the opportunity of using the Gymnasium. As the young women expressed a desire for basket ball practice I continued attendance at the Gymnasium during the month of May and was well repaid by the interest shown. Some thirty students took an active part in this invigorating game. The women have shown their appreciation and interest in outdoor athletics by having five dollars a year added to their term bill, which sum is to be devoted to the women's athletics. Now it seems most advisable that there be an Advisory Board for Women's Athletics, which should be made up of members of the Faculty, Alumnae and underclass women. The use made of the new tennis courts show that when they have an opportunity for outdoor exercise they make the most of it.

Again we have had to make use of Goddard Gymnasium. The use of the same building for a gymnasium for both men and women is very disadvantageous and unsatisfactory for each ;—causing many inconveniences and seriously interfering with the work in many ways. The only hours the Gymnasium is available for the use of the women, are regular recitation hours, and the time taken out of these for passing from the other buildings, dressing, etc. reduces the actual time for physical training to half an hour or less. In this haste the all important hygienic factor in the work is generally overlooked. This, together with the fact that the greater part of the apparatus, which is adapted for the men, is not suitable for women to use, makes my work difficult and unsatisfactory. For these reasons and many others I hope the rumor, that provision will soon be made to remedy these conditions, may become an established fact.

Respectfully submitted,

MAUD CARVILL,

Instructor in Physical Training for Women.

TUFTS COLLEGE,

September 19, 1900.

SUMMER SCHOOL OF
CHEMISTRY

SUMMER SCHOOL OF CHEMISTRY.

To the President :

During the last term, twenty-one students attended the Summer School of Chemistry, the largest number in the history of the School. Of these students, one was a teacher, one a druggist, one a student in the public schools and the remaining eighteen students from Tufts College. Four took Chemistry 1 ; six, Chemistry 2 ; four, Chemistry 3 ; five, Chemistry 4 ; three, Chemistry 5 ; and one, Chemistry 7. The time allowed for each subject, the text-books, and methods of instruction were the same as in these courses when given during the college year.

Throughout the summer term, Dr. Leighton ably assisted with the work of instruction.

Respectfully submitted,

FRANK W. DURKEE,

Professor of Inorganic Chemistry.

TUFTS COLLEGE.

September 19, 1900.

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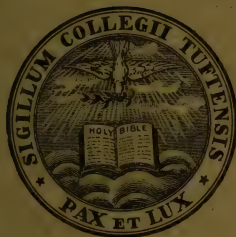
ANNUAL REPORT

OF THE

PRESIDENT

OF

TUFTS COLLEGE



1900-1901

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The address of the Bromfield-Pearson School, and of the Divinity School, is TUFTS COLLEGE, MASS. * * * * *

The address of the Medical and Dental Schools is CORNER HUNTINGTON AND ROGERS AVENUES, BOSTON, MASS. * * * *

ANNUAL REPORT

OF THE

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1900-1901

TUFTS COLLEGE PRESS

H. W. WHITTEMORE & CO.
TUFTS COLLEGE, MASS.

PRESIDENT'S REPORT

1900-1901

To the Honorable and Reverend the Trustees of Tufts College:—

GENTLEMEN:—The President of the College has the honor to submit the following report for the academic year 1900-1901; namely, from September 19, 1900 to September 18, 1901.

New Appointments.—The following new appointments upon the board of instruction have been made.

THOMAS WHITTEMORE, A.B., *Assistant Professor of English.*

GEORGE VAN NESS DEARBORN, A.M., M.D., Ph.D., *Assistant Professor of Physiology.*

ROBERT W. HASTINGS, M.D., *Instructor in Theory and Practice of Medicine and Assistant in Pediatrics.*

JAMES S. HOWE, M.D., *Assistant Professor of Dermatology.*

WILLIAM RICHARD RANSOM, A.B., A.M., *Walker Special Instructor of Mathematics.*

FRANZ ESS, S.T.B., Ph.D., *Instructor in Modern Languages.*

AMADEUS GRABAU, M.S., S.D., *Lecturer on Geology.*

WIGHTMAN W. GARNER, Ph.D., *Instructor in Qualitative Analysis.*

HORACE I. MORAN, M.D., *Instructor in Obstetrics.*

HENRI F. CHADWICK, B.S., *Assistant in Electrical Engineering.*

A. OLGA CUSHING, M.D., *Assistant in Pathology and Bacteriology.*

JOHN S. MAY, M.D., *Assistant in Obstetrics.*

FREDERICK F. STRONG, M.D., *Assistant in Pathology and Bacteriology.*

FRANCIS D. DONOGHUE, M.D., *Assistant in Operative Surgery.*

ERVIN A. JOHNSON, D.D.S., *Instructor in Clinical Dentistry.*

WALTER F. WINCHESTER, D.D.S., *Instructor in Clinical Dentistry.*

CHARLES B. DARLING, M.D.,
 W. HERBERT GRANT, M.D.,
 EDWARD A. PEASE, M.D.,
 D. H. CRAIG, M.D.,

Assistants in Clinical Gynaecology.

THEODORE C. ERB, M.D., *Instructor in Obstetrics.*

VINCENT E. TOMLINSON, S.T.B., *Russell Lecturer.*

Re-Appointments.—Re-appointments have been made as follows :—

BYRON H. STROUT, D.D.S., *Lecturer on Operative Technics and Instructor in Anaesthesia.*

EDWARD L. TWOMBLY, A.B., M.D., *Instructor in Clinical Medicine.*

GEORGE A. WEBSTER, M.D., *Instructor in Otology.*

WARREN F. GAY, A.B., M.D., *Instructor in Surgery and Assistant in Surgical Pathology.*

JOSEPH C. STEDMAN, M.D., *Instructor in Rectal Diseases.*

EDWARD E. THORPE, M.D., *Instructor in Medical Chemistry.*

CHARLES F. PAINTER, M.D., *Instructor in Orthopedic Surgery.*

CHARLES H. CHASE, B.S., *Instructor in Shopwork.*

HARRY GRAY CHASE, B.S., *Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A.B., *Instructor in the History of Fine Arts.*

LEO RICH LEWIS, A.M., *Instructor in French.*

FRED DAYTON LAMBERT, A.M., PH. D., *Instructor in Natural History.*

VIRGIL L. LEIGHTON, A.M., PH. D., *Instructor in Organic Chemistry.*

SAMUEL C. EARLE, A. M., *Instructor in Modern Languages, and Assistant in English Literature.*

EUGENE T. MCNAMARA, M. D., *Instructor in Electro-Therapeutics.*

CHARLES D. KNOWLTON, M.D., *Instructor in Pathology and Bacteriology.*

ELIZABETH A. RILEY, M.D., *Instructor in Gynaecology.*

WILLIAM J. DALEY, M. D., *Instructor in Ophthalmology.*

JOHN I. FRENCH, M.D., *Instructor in Materia Medica and Therapeutics.*

GEORGE C. AINSWORTH, D.D.S., *Instructor in Orthodontia.*

WILLIAM R. WHITEHORNE, A.M., *Assistant in Drawing and Mathematics.*

WALTER J. OTIS, M.D., *Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, A.B., M.D., *Lecturer on Laryngology.*

GEORGE A. BATES, D.D.S., *Lecturer on Histology.*

HENRY J. BARNES, M.D., *Lecturer on Hygiene.*

EUGENE THAYER, A.M., M.D., *Demonstrator of Anatomy.*

RICHARD F. O'NEIL, A.B., M.D., *Demonstrator of Bandaging and Apparatus.*

RICHARD F. CHASE, M.D., *Assistant in Clinical Medicine.*

WALTER I. BRIGHAM, D.D.S., *Lecturer on Operative Dentistry.*

ETHEL MONROE HAYES, A.B., *Assistant in Library.*

KATHARINE L. STEBBINS, A.B., *Secretary's Clerk.*

WILLIAM P. HOUSTON, D.D.S.,

JOHN W. FORBES, D.D.S.,

EDGAR O. KINSMAN, D.D.S.,

KNUT J. LUTROPP, D.D.S.,

HENRY H. PIPER, D.D.S.,

WILLIAM RICÉ, D.D.S.,

BURLEIGH C. GILBERT, D.D.S.,

Instructors in Clinical Dentistry.

FRED C. MERRILL, D.D.S.,

EDWARD A. QUINN, D.D.S.,

Instructors in Mechanical Dentistry.

LIZZIE MAUD CARVILL, A.B., *Instructor in Physical Training for Women.*

HENRY W. RUGG, D.D.,

WILLIAM H. DEARBORN, B.D.,

FRANK O. HALL, B.D.,

RICHARD EDDY, D.D.,

HENRY B. METCALF, A.M.,

E. L. HOUGHTON, A.M.,

Lecturers to the Divinity School.

Proctors.

W. W. GARNER, PH.D.,

H. F. CHADWICK, B.S.,

A. B. LAMB, A.M.,

F. D. LAMBERT, PH.D.

Professor Marshall.—John Potter Marshall, A.M., who since 1898 had been Professor Emeritus of Geology and Mineralogy, died in February last. At the time of his death he was the senior member of our board of instruction. He came to the College with the first President, Hosea Ballou 2nd, and rendered important assistance in its organization and in forming the first courses of study. He was a man of broad mind, well in-

formed upon a variety of subjects, and of indefatigable industry. He laid the foundations of our Museum of Natural History and had the great satisfaction of installing and arranging the specimens which he had spent the greater part of his life in collecting, in the building which was given to the College by the late P. T. Barnum. Up to the time of his retirement, in 1898, he was engaged continuously in the work of instruction. Nearly every student that graduated during his more than forty years of service enjoyed the privileges of his class room, and all felt for him respect and affection. No man has ever shown a deeper devotion to the progress and development of the College than he; and he followed his pupils into their life work with the interest and pride of a father. Only one member of the original Faculty now remains alive—Professor William P. Drew, of Lansdown, Pennsylvania. He severed his connection with the College many years ago, but we were all much gratified by his presence at the Commencement this year.

Admissions and Enrolment.—The whole number of students admitted to the College in all departments is three hundred and thirty. They are distributed as follows:—

College of Letters	132	
Divinity School	7	
Medical School	109	
Dental School	76	
Bromfield-Pearson School	6	330

The whole number of Students enrolled in the College in all departments is eight hundred and twelve. They are distributed as follows:

College of Letters:—

Graduate	5	
Senior	52	
Junior	52	
Sophomore	44	
Freshman	100	
Special	59	312

Divinity School : —

Graduate	2	
Senior	10	
Middle	4	
Junior	2	
		18

Medical School : —

Senior	30	
Third year	54	
Second year	77	
Freshman	103	
Special	8	272

Dental School : —

Senior	50	
Junior	50	
Freshman	76	176

Summer Schools	28	
Bromfield-Pearson School	6	

Total number of students	812	
Names appearing twice	28	

Women Students.—The whole number of women students in all departments is one hundred and fifty-eight. They are distributed as follows :

College of Letters	99	
Medical School	52	
Dental School	7	158

Degrees.—The whole number of degrees given in course at the last Commencement was one hundred and fifty-three as follows : —

Bachelor of Arts	31
Bachelor of Philosophy	2
Bachelor of Science :—	
In Civil Engineering	3
In Mechanical Engineering	1
In Electrical Engineering	9
In Chemistry	1
Bachelor of Divinity	8
Doctor of Medicine	35
Doctor of Dental Medicine	46
Master of Arts	5
Master of Science	3
Doctor of Philosophy	1
Total number of degrees in course	153

The total enrolment of the College in 1895-6 was four hundred and sixty-five. In five years, therefore, there has been a gain of over seventy-six per cent. It will be unwise, however, to conclude that the gain will be as rapid in the next five years, since this increase has been made up in part by the addition of the Dental School. But it is evident from a review of the last ten years that we have entered upon a period of substantial and steady growth. The fact is very gratifying to those who have worked hard and waited long. Patient and faithful adherence to a high standard begins to receive recognition. Our chief concern now is lest our increase may be too rapid. For though we have broadened and increased our facilities in many ways during the last decade, we have about reached the limit of our capacity in lecture-rooms and laboratories. Should our classes grow much beyond their present size a new lecture hall will become a very pressing need. We could today, even, find ample use for such a building.

Improvements.—At the beginning of the year we were erecting a boiler-house and installing a boiler to furnish heat, light and power for the buildings of the engineering department. The work was completed before the cold weather fairly set in, and has given abundant satisfaction. A careful record has been kept of the work accomplished

and accurate tests have been made of the relation of performance to fuel consumed. Everything goes to prove the efficiency and economy of the plant. It would undoubtedly be greatly to the advantage of the College if we had the means to extend the system to all our buildings.

No very important changes have been made in the College grounds. But the wire fence which was tentatively constructed some two years ago has been carried around the whole of the field in which the buildings of the College of Letters and Divinity School stand. This along with the careful clipping of the grass of the entire campus has added immensely to the dignity and beauty of the hill. The care of the grounds together with the growth of the trees contribute to make this a most attractive spot whose charms increase year by year. I realized this summer while walking under the majestic elms of Christ Church in Oxford how essential time is to give an air of antiquity and classic beauty to a college. But even our own elms which some of us saw planted as mere saplings are already becoming majestic and impressive.

Summer School of Biology.—A new feature of the department of Biology has been the institution of a permanent laboratory for summer work at South Harpswell, Maine. A piece of land has been purchased and a laboratory erected and equipped for first class work. It was opened for students from June twentieth to September first. Thirteen students were enrolled. With two exceptions all of these were engaged in the solution of some problem. Many of the results will appear later in print. The enrolment included workers from Harvard and Chicago Universities, and from Colby, Lafayette, Wellesley, Wells and Tufts Colleges, the Westfield Normal School, the Perkins Institute and the Parker School at Chicago. The laboratory may be regarded as a success and a branch of the College that is destined to play no small part in the advancement of biological science. It is to be hoped that be-

fore the opening next spring, means may be obtained to build an addition to the laboratory and increase the equipment of boats, glassware and apparatus. There is need of an improvement in the water supply and drainage. The efficiency of the laboratory would be greatly promoted by rooms for advanced investigators and a motor launch for collecting.

***Medical and Dental Schools.**—At the time of my last report the plans for the new building for the Medical and Dental schools had been perfected, the contracts made and the work begun. With no more than the ordinary delays incident to so important an enterprise, the construction has gone on and the building will be ready for occupancy at the beginning of the medical term, on the third day of October next. It will be opened with due formality at that time. The plans have been very carefully studied under the advice of all the specialists who will have anything to do in the schools, and have been worked out to their complete satisfaction and even admiration. Every teacher seems to be more than satisfied. The laboratories are well ventilated, full of light and provided with every facility that modern investigation and research require. The evidences are very strong that what we have done is fully appreciated by those who are seeking the best instruction in dentistry and medicine. It is pretty certain that the combined enrolment of the two schools will not fall below five hundred for the next year. These schools certainly have a great future before them.

Administration.—One or two important changes have been made in the administration of the College. For the first time the academic department of the College of Letters has had a working Dean. It was fortunate that for this office we were able to command the services of Professor William R. Shipman, who, for many years, has sustained the most intimate relations with the internal life

* See appendix.

of the institution and been in closest touch with the work of the classroom and the entire student body. The effect of this appointment has been, not only to secure a more efficient organization of the Faculty, but to relieve the President of many details which, hitherto, have devolved solely upon him. Instead of the particular report of each individual instructor, which it has been my custom to present, I invite your attention to the report of the Dean embracing the work of all the teachers in this department.

The Administrative Board of the engineering department has now got into good working order. The completion and occupancy of Robinson Hall has rendered the work of administration comparatively easy. Dean Anthony has been enabled to give a much closer attention to the arrangement of the programmes, to have a better oversight of the efforts of individual teachers, and to become more familiar with the needs of the students. His report of the department under his charge is, also, submitted herewith.

Library.—I trust you will give a careful perusal to the report of the Librarian. It is most important because it shows the growth of the library in recent years, the directions in which it is expanding and the uses to which it is put. The most cordial thanks are due to Mr. E. R. Holden and Mr. James D. Perkins for their timely gifts which have added so many volumes to the departments of history and modern languages. But the most significant thing in the report is the fact which it discloses that we have passed the limit in our present building, not only of easy and effective handling of our books, but even of proper storage. We have scarcely ever had a more imperative need than we now have for a new library building. We need it to afford proper facilities to those who must make use of it in their daily work. We need it to meet the demands of the era of expansion that is already upon us. We need it to afford protection to our treasures many of which are priceless. Where is the man or woman who will secure an im-

mortality of fame by erecting this building and making this contribution to the best interests of learning and science? We ought not to be compelled to wait long in this age of colossal fortunes and generous gifts to education for such an one to come.

Music.—The Professorship of Music was created at the request of Mr. Albert Metcalf, from the income of his gift to the College. At first the appointment of a Professor in this subject was made tentatively and for a limited period. But at once it appeared that the interest was sufficient to justify the action of the Trustees, and when the period of limitation had expired the action was made permanent. Of late the increase of interest has been very marked and the indications are that the department is likely to become in the near future one of the strong departments of the College.

Apart from his specific work the Professor has rendered great service to the College in general; first, in gathering, organizing, training, and directing a chorus choir for our Sunday services in Goddard Chapel; secondly, in giving oversight and instruction gratuitously to the Glee Club, taking pains that as far as possible, all the work of the Club shall be distinctly meritorious; thirdly, in the preparation of college songs and in the awakening of an interest in music throughout the College.

Mr. Metcalf has watched the work carefully, and has made it the object of generosity, in the gift of valuable books from time to time, and in placing at the College for the use of the Professor and students in music the valuable Ritter Library of nearly three thousand volumes. The department has reached such proportions that it may well command the attention of other persons who are interested in seeing music placed here permanently upon a historic and scientific basis.

Fine Arts.—Courses in Fine Arts have been given for a number of years by Assistant Professor Whittemore, who

has held, in addition to his other duties, the appointment of Instructor in this subject. The work has steadily grown in interest and importance. The time has come when the enlargement of the department so that it might have the entire time of a competent man would be of distinct advantage. There is also a very pressing need of materials for illustration, slides for projection, prints and photographs, and other objects illustrative of art in its various phases. If some person could be found who would make a regular contribution of money for such purposes, the efficiency of the department would be much enhanced.

Milton's Maske of Comus.—The presentation of the Maske of Comus by the English department under the direction of Assistant Professor Whittemore, was an event of so much importance that it deserves mention in this report. The aim was to reproduce with literal exactness, as to both scenery and costumes, as well as in literary form, the play as it was originally given in Ludlow Castle where the poet himself is supposed to have been one of the actors. The production involved an immense amount of research on the part of the students and the result justified the interest that was taken in it by scholars and men of letters in different parts of the country. That a work involving so much knowledge and skill can be undertaken and carried through, by a single department and mainly by a single instructor, in a way to elicit universal commendation, may well afford satisfaction to the friends of the College.

Goddard Chapel.—The tightening up of our rule requiring attendance upon morning chapel makes a demand for something more than three hundred seats. This calls for not only all the sittings in the main body of the church but those in the transept as well. One or two more freshman classes of the size of those of the last two years will make very imperative the need of the north transept. The original plan of the building contemplated ultimately the throwing out of this wing. I was not without hope that

the donor, Mrs. Goddard, would, among her other benefactions, find it possible to provide for this enlargement of the Goddard Chapel, about which she talked with me more than once. But I suppose she found the demands upon her resources too great. Still the work should not be left undone. It is estimated that for the sum of five thousand dollars this enlargement can be effected. There ought to be among the many friends, alike, of Mrs. Goddard and the College, some person who would furnish this very moderate sum.

E. H. CAPEN.

TUFTS COLLEGE,
September 18, 1901.

COLLEGE OF LETTERS

ACADEMIC DEPARTMENT.

To the President :—

This report of the College of Letters will not attempt to give details of the method and scope of work in the various subjects of instruction. Such information may be found in great part in the annual catalogue for 1900-01 (pp. 58-93), and only the more important variations will be noted here. In several departments an increased amount of work was done ; in English Literature somewhat less than the usual amount, by reason of Professor Maulsby's absence for the year. The following table may be of interest, as showing the distribution of students over the field of offered subjects. It will explain some features of the table to observe that all candidates for the Bachelor's degree must take at least ten term hours in English; six in Mathematics, an aggregate of eighteen in three foreign Languages, six in the group comprising Philosophy and History and Political Science, six in the group comprising Physics and Chemistry and Biology.

<i>Department</i>	<i>No. Subjects</i>	<i>Total En-rolment</i>	<i>Department</i>	<i>No. Subjects</i>	<i>Total En-rolment</i>
English			Political Science		
Composition	7	375	Government	5	60
Literature	8	221	Economics	6	41
Oratory	3	40	Mathematics	10	124
German	7	157	Physics	5	147
French	7	112	Chemistry	14	128
Italian	1	13	Biology	6	42
Latin	6	120	Geology	2	8
Greek	6	56	Astronomy	1	7
Classical Archaeology	1	22	Music	3	21
Philosophy	8	123	Fine Arts	1	56
History	5	96			

English.—The excessive enrolment in Composition is explained by the fact that subjects heretofore occupying the first and second years were brought together in the first. It is believed that the present requirement of eight hours in Composition may be abridged in case of students found to be sufficiently advanced, whose writing may be continued in connection with various literature courses. There should be more writing rather than less, but the advanced student should be allowed a wider option. In the work of the year valuable assistance was rendered by Instructor Earle in both literature and composition classes; but the reading of twelve thousand papers, the marking of at least three fourths for correction, together with four or five conferences each term between instructor and individual writer, made of Composition alone a heavy task for the teaching force. All had literature classes also, and besides these taught other subjects not belonging to the English department.

Oratory.—The classes in Oratory were conducted by Assistant Professor Whittemore, with the usual enrolment and the usual large demand on the time of Professor and students made by various public exercises towards the end of the year. Far more than all this, however, was the labor expended on Milton's *Maske of Comus* under the general direction of the acting head of the department, with the efficient co-operation of the department of Music. As an object lesson in the method and value of conscientious scholarship, the production was of the greatest service to all connected with the College.

French and German.—The departments of French and German are so completely organized that the work of the year, proceeding in the usual extent and variety, calls for no special comment. Enrolment is always large and many students choose these for their major departments.

Latin.—Professor Denison of the Latin department gave for the first time a half-year course of lectures, three a week,

on Greek and Roman architecture, illustrating the subject very satisfactorily with an equipment of three hundred new lantern slides. By the help of several students, the cataloguing of classical magazines, begun the previous year, was continued, and an excellent working catalogue is now in use, although much yet remains to be done before all the classical store in our library is included. Three students presented papers showing a most thorough study of the Agricola of Tacitus, the basis of competition for the Latin prize. The college is indebted to Mr. Harry H. Richardson of the class of 1904 for a beautifully executed wall map of Ancient Rome, to be displayed in the Latin room. The map is the joint production of Mr. Richardson and Dr. William M. Rose of the Tufts Medical School.

Greek.—The work in Greek was slightly abridged by reason of Professor Wade's serious illness in the preceding vacation. His health improved through the year, however, and he has already gone abroad on a year's leave of absence, to be spent mostly in the American school at Athens. Peculiar conditions affecting one subject in this department call for serious consideration. The subject referred to is Greek 1, a double subject, which in six lessons a week for a year covers the usual three years' preparatory course. Of fourteen students in this class the past year seven graduated in June and of the remaining seven only the three 1904 men will enter the class in Greek 2 next year.

The explanation is largely in the fact that certain students, inasmuch as three foreign languages are necessary for graduation, resort to this subject for the hours of credit with which to meet that requirement. Very likely they entered with German, French, and more or less Latin. Now a student who enters with little German and French, or even with none at all, finds a class ready to receive him and carry him steadily forward. The same is

true if he enters without Greek ; but with Latin the case is very different, there is no provision for the student who enters with something less than the full preparatory course. Such a one may be allowed to join the class Latin 1 and make his place if he can, or he may take a tutor and join a college class when he is ready. Plainly the conditions are not favorable for continuing Latin, and it is due to this class of students that suitable provision be made for them. Tufts has been foremost in promoting a closer articulation with secondary schools, but here is an important particular in which connection is not made. These suggestions are offered by the writer of this report, and not by the Greek or the Latin department.

Philosophy.—The work in Philosophy was conducted substantially as in preceding years, by lectures, supplemented by text books, collateral reading, written and oral examinations. An important variation in the year's work was the omission of elementary Ethics (Philosophy 5), usually elected by a few students in the second half-year, and the introduction of Pedagogics. The large enrolment was hardly a surprise, in view of the fact that so many of our students look forward to teaching. A fuller treatment of the subject would doubtless meet a general need. Professor Cushman's lectures, two a week, considered chiefly the ethical and psychological principles involved in teaching. These were supplemented by lectures on practical methods, a weekly course given by prominent educators of the neighborhood : Messrs. Groce, Rollins, and Campbell ; Drs. Beckwith, Parmenter, and Dame ; Pres. Capen. Professor Cushman wishes to acknowledge the stimulus given to his students through these hints from a wide experience.

History.—In History it was a year of increased activity and, in the main, satisfactory results. It was found that first-year students are not yet fully prepared to take up the work and the question is raised whether it may not be wise

to make a year of college residence a pre-requisite. The department desires to make acknowledgment of the generous gift of Mr. E. R. Holden for the purchase of books on English and American history. During the year covered by this report one hundred and sixty-four volumes have been purchased from this fund. It is hoped that other friends of the college will make it possible to increase our collection of books in the fields of continental history and Politics and Government.

Political Science.—The enrolment in Political Science indicates a good degree of interest in these subjects, which must soon appear indispensable in that preparation for life to which the higher institutions of learning are more and more to contribute.

Mathematics.—In the absence of Professor Brown, Assistant Professor Wren had charge of his department, and Instructor Ransom besides a heavy program of mathematical subjects taught Astronomy. Professor Brown's resignation announced to go into effect at the end of the year, after forty years of service, has been withdrawn and he will resume work next year.

Physics.—Professor Dolbear found improved accommodation for his class in Physics 1 (enrolment 114) in the new Robinson Hall, with its large lecture room well heated and ventilated, and with conveniences for apparatus that rendered his work easier in many respects. Mr. J. D. Danforth was his efficient helper through the year in preparing for experimental work. In addition to the catalogue announcement of subjects, the professor gave a course of lectures, one a week through the second half-year, on the telegraph and telephone, which was attended by fourteen students.

Chemistry.—The department of Chemistry showed an increased enrolment, and apparently will soon reach the limit of laboratory accommodations. Practically all the

subjects indicated in the catalogue have been carried on, including the usual amount of research work. Professor Michael will be absent next year. Report of the summer school is made elsewhere.

Biology.—The year's work in Biology was very satisfactory, perhaps especially that of the large class beginning the subject. Two graduate students pursued work in the department, Dr. W. H. Ruddick continuing his investigations of the mammalian head; Mr. R. J. Seymour from the Ohio State University working upon the muscles of the head of the tadpole, preparing a dissertation on which he was awarded the degree of Master of Science at the last commencement. Two papers, both by Dr. Kingsley, were published by the department during the year; one on the origin of mammals, in *Science*, the other, a catalogue of the invertebrate animals of Casco Bay, was printed by the Portland Society of Natural History. Report is elsewhere made of the summer school at Harpswell, Maine.

Geology.—In Geology, which for the present is in charge of the department of Biology, Dr. W. A. Grabau conducted two classes, the work of one consisting in a rapid outline of general principles accompanied by laboratory work on rocks and fossils and by numerous excursions to points of interest; the other devoted to an investigation of problems in local geology, largely a tracing of the outcroppings and contacts of the great diabase dike in Medford. It is to be regretted that a more attractive position at Columbia University made it impossible to retain the services of Dr. Grabau.

Respectfully submitted,

WILLIAM R. SHIPMAN, *Dean*.

DEPARTMENT OF ENGINEERING.

To the President :—

I have the honor to submit the following report of the work in the Department of Engineering.

The very large entering class of last year found adequate accommodations in the newly opened Robinson Hall, and the recitation rooms and laboratories will amply provide for the natural increase in students during several years. The space allotted the laboratories makes it possible to use much apparatus that has not been available heretofore for want of floor space. But in order that the laboratory equipment shall keep pace with the rapidly increasing number of students we cannot delay the consideration of the conditions which must be met within two years, and shall need to take definite action toward increasing the equipment in various ways.

The Engineering Library.—During the past year the engineering books have been moved to the specially fitted rooms in Robinson Hall. They have been re-catalogued and made available to the students during the working hours of the day. A simple charging system has been adopted which does not necessitate the attendance of a librarian, and the students have shown their appreciation of the privileges granted them by faithfully conforming to the regulations. We have made provision for the proper filing and cataloguing of trade circulars, especially those relating to Steam and Electrical Engineering; and the manufacturers have co-operated with us by providing us with their latest publications. It is our desire to make this departmental library an important factor in the daily work of the engineering student.

Howe Building (power station).—The department of Steam Engineering has been greatly benefited by this addition to its laboratory, not only by reason of the increased space, but because of the improved facilities for engine and boiler tests. The Sturtevant engine and Mordey alternator have been placed in this building and specially arranged for experimental work. A condensing apparatus has been connected with the engine for tests relating to water consumption. The one hundred and twenty five horse-power boiler yields a sufficient steam supply for all purposes, with ample margin for heating the Chemical Laboratory and Commons Building, when it shall be decided to connect them. At present we are heating Robinson Hall and the Bromfield-Pearson Building from this source, which also furnishes the necessary steam for all power and electric lighting in these buildings. The boiler is fitted with all necessary attachments for experimental work in the making of tests. The storage batteries and dynamos have been placed in this building, thus making it the nucleus for a general heating and lighting plant for the future. The economy of this arrangement has been demonstrated by the experience and tests of the past year, and the added convenience to the department cannot be overestimated.

Civil Engineering.—The new drafting rooms in Robinson Hall have been fitted with modern drawing tables, and the wiring is now being done for electric lighting. Our drawings and plans have been classified and partly catalogued preparatory to a proper filing of them. The demand for more practical education has been met in part by increasing the hours of field surveying and instrument practice, by developing extra problems in laboratory experiments, and in making the drafting room work pertain as much as possible to data from actual field practice, or laboratory observation. We are giving the course in elementary surveying to all engineering students ; but the

large increase in the size of the classes is making a serious demand on the teaching force and equipment of instruments. The senior civils have made a test of the pumping engine at the East Boston Station of the Metropolitan Sewerage System. The test was of twenty-four hours duration and included the usual observations on boiler, engine, and pumps, necessary for obtaining the required data. The results were submitted to the Metropolitan commission for record and future use. While the equipment of surveying instruments has been sufficient for the growth of the department the experimental mechanics, and hydraulic laboratories have been in great need of extension, and additional equipment. The latter need is now being partly supplied by the addition of a Worthington duplex pump having a capacity of six hundred gallons per minute; a vertical impulse Pelton water motor, and a Price current meter for use in hydrographic surveying. These, together with our present apparatus, will afford excellent opportunities for experimental work in this department.

Electrical Engineering.—The electrical laboratories will not begin to feel the pressure due to the increased size of classes until next year. But even now we find it necessary to employ all of our available energy and funds toward equipping the laboratories. The expenditure of a considerable sum will be necessary to meet the demands due to the present rate of increase in the number of students, and prompt action is called for to secure and properly install the apparatus essential to the continued growth of the department.

It is also necessary for us to anticipate an increase in our teaching force. In academic work it is usually possible to secure good instructors at comparatively short notice; but such is not the case in engineering. This is largely due to our competition with the field of practical engineering, which field of labor is much more remunera-

tive, and, to most graduates, more attractive than that of instruction. It is therefore necessary to anticipate the wants in this direction that we may be prepared to meet the growth of the department.

Engineering Society.—The work of the newly formed Engineering Society is deserving of notice. Beside the lectures which have been given, and the visits to engineering works, which have been made under the direction of the society, the first number of an engineering magazine has been published. This is known as the "Tufts Engineer" and contains articles of a purely scientific character which have been contributed by alumni, and students of the department.

Positions for Graduates.—During the past two years we have received more applications for graduate engineers than it has been possible for us to supply. This demand has come from disinterested engineers, as well as from the alumni. The graduates of the Engineering Department are now filling many prominent and influential positions in the various fields of engineering, and this is a most important factor in the growth of the department.

Respectfully submitted,

GARDNER C. ANTHONY,

Dean.

TUFTS COLLEGE DEPARTMENT OF ENGINEERING.

September 19, 1901.

Courses of Study.—The following courses of study have been given during the past year.

Courses Given in 1900-1901.

First Term.

	<i>Subject.</i>	<i>Term Hours.</i>	<i>No. in Class.</i>	<i>Instructor.</i>
1	Algebra	4	35	Prof. Wren
3	Trigonometry	2	36	Prof. Wren
7	Sophomore Calculus	3	10	Prof. Wren
8	Junior Calculus	2	13	Prof. Wren
9	Differential Equations (Seniors) . . .	2	12	Prof. Wren
20	Mechanical Drawing	2	46	{ Prof. Anthony
23	Technical Sketching	1	10	{ Mr. Whitehorne
25	Mechanism	3	10	Prof. Anthony
27	Advanced Machine Drawing	2	12	Mr. C. H. Chase
29	Advanced Machine Design	2	8	Prof. Anthony
40	Carpentry, Wood-turning and Foundry	2	38	Mr. C. H. Chase
50	General Chemistry	3	10	Prof. Durkee
52	Qualitative Analysis	3	11	Prof. Durkee
70	Physics *			{ Mr. H. G. Chase
73	Electrical Laboratory	3	12	{ Mr. Chadwick
74	Electricity and Magnetism	3	5	Mr. H. G. Chase
79	Electrical Laboratory	3	7	Prof. Hooper
82	Alternating Currents (theory) . . .	4	7	Prof. Hooper
84	Alternating Currents (mathematical treatment)	3	2	Prof. Hooper
90	Surveying	2	11	Prof. Sanborn
92	Topography	2	10	Prof. Sanborn
94	Railroad Surveying	2	3	Prof. Bray
95	Railroad Engineering	3	3	Prof. Bray
97	Roofs and Bridges	3	4	Prof. Bray
110	Hydraulics	3	11	Prof. Sanborn
112	Pure Mechanics	3	14	Prof. Sanborn
114	Applied Mechanics	3	12	Prof. Bray
115	Experimental Mechanics	1	18	Prof. Sanborn
118	Structural Design	2	4	Prof. Bray
120	Steam Engine	3	14	Prof. Anthony
	Steam Engineering (extra)	3	2	Prof. Bray
123	Engineering Laboratory	2	1	Prof. Bray
140	English 1 *			
142	English 3 *			
160	French, Elementary	3	12	Mr. Earle
161	French, Intermediate	3	23	Mr. Earle
162	French, Advanced	3	9	Mr. Earle
165	German, Elementary *			
166	German Intermediate *			
167	German, Advanced *			
180	Political Economy	3	13	Prof. Metcalf

* Course given by the College of Letters.

Courses Given in 1900-1901.

Second Term.

	<i>Subject.</i>	<i>Term Hours.</i>	<i>No. in Class.</i>	<i>Instructor.</i>
5	Analytical Geometry	4	27	Prof. Wren
7	Sophomore Calculus	3	7	Prof. Wren
9	Differential Equations (Junior) . . .	2	13	Prof. Wren
20	Mechanical Drawing	2	40	{ Prof. Anthony Mr. Whitehorne
21	Descriptive Geometry	4	41	Prof. Anthony
26	Elementary Machine Drawing . . .	2	9	Prof. Anthony
28	Elementary Machine Design	1	8	Prof. Anthony
42	Pattern Making	1	37	Mr. C. H. Chase
44	Forging	1	14	{ Mr. C. H. Chase Mr. R. B. Moore
45	Chipping and Filing, Machine Tools .	2	7	Mr. C. H. Chase
50	General Chemistry	3	5	Prof. Durkee
53	Quantitative Analysis	3	2	Prof. Durkee
70	Physics *			
72	Physical Laboratory	3	16	{ Mr. H. G. Chase Mr. Chadwick
73	Electrical Laboratory	2	12	{ Mr. H. G. Chase Mr. Chadwick
76	Electrical Problems	2	9	Mr. Chadwick
77	Dynamo-Electrical Machinery . . .	3	8	Prof. Hooper
79	Electrical Laboratory	3	7	Prof. Hooper
83	Alternating Currents (Single and poly- phase machinery)	3	7	Prof. Hooper
85	Electrical Topics	3	7	Prof. Hooper
91	Surveying	2	9	Prof. Sanborn
92	Topography	2	5	Prof. Sanborn
93	Highways	2	3	Prof. Sanborn
96	Railroads (Economic Location) . . .	1	3	Prof. Bray
98	Bridge Design	2	3	Prof. Bray
109	Sanitary Engineering	3	12	Prof. Sanborn
113	Applied Mechanics	3	12	Prof. Bray
117	Structural Design	2	4	Prof. Bray
121	Steam Engineering	3	2	Prof. Bray
	Steam Engineering (extra)	3	2	Prof. Bray
140	English I*			
147	English II	2	12	Mr. Earle
160	French, Elementary	3	9	Mr. Earle
161	French, Intermediate	3	21	Mr. Earle
162	French, Advanced	3	8	Mr. Earle
165	German, Elementary *			
166	German, Advanced *			
167	German, Advanced *			

* Course given by the College of Letters.

THE LIBRARY.

To the President :

I herewith submit the Report of the Library for the year 1900-1901.

Accessions from September 1, 1900 to September 1, 1901.

	<i>Vols.</i>	<i>Pams.</i>	<i>Nos.</i>
Total	1,789	1,691	1,730
Purchase	382	1	1,286
Donations	1,403	1,690	444
Binding	4		
Yearly average of accessions for five years . . .	1,758		
Total number of volumes in the Library . . .	42,864		
“ “ of pamphlets in the Library . . .		30,530	
Circulation for home use	5,689		
“ among Professors	945		
“ “ Students	4,744		
<i>Character of Circulation.</i>			<i>per cent.</i>
I. English prose fiction			5.17
II. History and biography			15.63
III. Poetry, drama and literature			14.98
IV. Arts and sciences			11.92
V. Theology and philosophy			6.13
VI. Law, politics, political economy and sociology			15.01
VII. French, German, Greek and Roman literature			10.91
VIII. Philology			.65
IX. Geography, education and miscellaneous . .			2.83
X. Periodicals and pamphlets			16.77

The accessions of the past year have not been as many as they were for the previous year, but the number of volumes purchased has been greater, and the purchases represent books that were bought because of their need and are generally of immediate practical use in the Library. There were no large donations of second hand books such as we receive sometimes containing a good many duplicates as well as works of value.

The donation of Mr. E. R. Holden of New York, represents one hundred and sixty-four volumes purchased by Professors Bolles and Evans, for the department of history. From Professor Bolles we received sixty-two volumes and numerous pamphlets; from President Capen sixty volumes, one hundred and seventy-six pamphlets; from Rev. F. Maguire, seventy-six volumes, one hundred and sixty-five pamphlets; from Miss Myrick seventeen volumes, among which was the history of Kent, England. Dr. Ruddick presented thirty-five volumes, most of them for the Medical School. From the United States Superintendent of Documents we received five hundred and sixty-three volumes, one hundred and eighty-four pamphlets, and though they are of much value, they require a great deal of room and the question of finding space for them in the coming years is a serious one. A number of volumes arrived too late to be counted in this report. Among them were the magazines from the binders, a box of foreign books, and some volumes purchased with the Holden money that had to be rebound.

After the completion of Robinson Hall the up-to-date books on engineering, electricity, and kindred subjects were sent there, and also the bound periodicals on the same subjects for the last ten years. Although the removal of those books probably accommodates those who would use them most, it weakens the general library in these subjects, and the ordinary reader leaves the remaining volumes unconsulted. This opens up the question of departmental libraries which to me seem of doubtful utility, unless the departments can be housed in one building, or duplicate copies of most of the books be kept in the general library.

The experiment was tried of keeping the Library open until 6 p.m. from March 12th to the end of the year; and while it suited a few, it inconvenienced others, especially those students who wanted to take out the reserved books for over night, and could not or would not wait until 5.45 for them. This late closing had a perceptible effect upon

the circulation, lessening it. Although the circulation was less for the past year, the use of the Library increased, and increases every year making additional demands upon the time of the Librarian and Assistant.

I would like to call the attention of the Alumni to the fact that it is desirable that the Library should contain all the volumes and pamphlets published by them, and it is also desirable for us to have any publications issued by members of the Faculty.

The exchange of duplicates which we had undertaken in the winter 1899 did not prove to be a success. Although we allowed nine hundred volumes, or about one half of the duplicates to go, although we received some books in exchange, although those received were of more value to us than the duplicates, and although we were glad of the space they had occupied, yet there were other works that we had hoped to get, but did not.

I have elsewhere spoken of the lack of room for government publications. As we are entitled to about five hundred volumes per year from the Superintendent of Documents, this need of more room is going to be increased greatly. The cases and the room for periodicals are crowded, and in fact the need of a new library building is growing more urgent every year. It is exceedingly inconvenient to be obliged to receive six large boxes of books at once, and unpack, catalogue and prepare them for shelving in the general reading room; but this was done recently. More shelving can be put in some places, and we must have it done at once.

Several weeks of the time of the Librarian and her Assistant were spent working upon the Register, and at many other times we were called upon to revise copies of proof. All of the time spent working on the Register really ought to have been employed in library work.

In the report of 1900 mention was made of the increase in the circulation of books upon social science and politics. The increase has continued until during the past year it

was more than double that of the preceding year. Few libraries can boast of so small a circulation of fiction as ours, namely, five and seventeen hundredths per cent.

Respectfully submitted,

HELEN L. MELLEN.

TUFTS COLLEGE,
September 18, 1901.

THE DIVINITY SCHOOL

THE DIVINITY SCHOOL.

To the President : —

The whole number of students connected with the Divinity School for the year 1900-1901, was eighteen—two graduates, ten seniors, four middlers, and two juniors. Six students who were ranked as seniors entered *ad eundem* from other Theological Seminaries. Eight seniors received the degree of S. T. B. Five of these took the full course in this School; three who received the degree, were from other Seminaries.

The full courses in the Divinity School cover three years for students who have had collegiate training, and four years for students who, by examination, satisfy the Faculty that they are able to pursue the course.

The aim of the School is to train men for a ministry that shall be at once scholarly and practical, efficient in the pulpit, and in the manifold work of the pastor. More and more, therefore, the methods of the School consult the demands of the church in modern life, both with respect to the teaching of the Christian scholar, and the real success of the Christian man.

The needs of the School are those which are designed to give character and standing to the special constituency which it is set to serve. Denominations and churches are made great in power and influence by the ministry which they invoke; and it is the ambition of this School to provide ministers who will deserve respect for a trained intelligence, a consecrated moral earnestness, and a constant religious motive. The School believes that the things that make for power and permanence in a particular denomination, are inseparable from the men who lead the Congregation in thought and worship; and the history of religious effort shows that religious sects gain social

position, grow in depth and riches of life, and rise to mastery in all that relates to stronger and finer human conditions, through an educated and devoted leadership in their clergy. This report, therefore, may urge a wise increase of those facilities of instruction, and those forces of personal power, by which alone the Christian denomination which the Divinity School serves, and the College it represents, can be honored. Of course the wider endowment of influence, in men and means, can come only through an increase of endowment in money. The immediate need of the Divinity School is financial endowment; and no greater help could come to the College at this stage of its history, than the help which gives to the Divinity School funds ample for its current expenses, and adequate to the increasing demand which is made upon it. The School need not necessarily be large, but it may be, and ought to be great in the ability of its teachers, and the force of the men it puts into the ministry. Indeed, the School need not be large for a creditable showing as a department of the College, for trustees and faculty will not lose sight of the fact that the real power of a theological seminary is lodged in the character of its graduates, and in their ability to speak for the College, and loyally work for a growing constituency in the communities where they are called to labor, and where their own scholarship and manhood are felt. We come back, therefore, to the question, and plea of endowment, special and complete, for the Divinity School, as the most direct and efficient way of aiding the College in its immediate life and work, and as the most direct and efficient way of helping the Divinity School to do its share towards solving the problems of individual and social life.

Respectfully submitted,

CHARLES H. LEONARD,

Dean.

TUFTS COLLEGE,

September 18, 1901.

THE MEDICAL SCHOOL

THE MEDICAL SCHOOL.

To the President :

I have the honor to submit to you herewith, the report of the Medical School for the year 1900-1901. The year has fulfilled the promise of the preceding years and has been a period of uninterrupted success and development. The number of students has largely increased, notwithstanding the advanced requirements for admission and there are now enrolled nearly four hundred students in the school lists. This increase in the number of students has necessitated a considerable increase in the teaching force and there are now included seventy persons who are giving instruction in the various departments of the School.

New appointments have been made in the Faculty as follows :

Dr. Timothy Leary has been promoted to be Professor of Pathology and Bacteriology ; Dr. Horace D. Arnold has been promoted to be Professor of Clinical Medicine. Drs. Howard S. Dearing, Herbert Warren White, E. Channing Stowell and George N. Kaan have been promoted to Assistant Professorships in their various departments and have been made members of the Faculty. Dr. James S. Howe has been made Professor of Diseases of the Skin. The following new appointments have been made in the Board of Instruction : Drs. Horace S. Moran, Robert W. Hastings, John S. May, A. Olga Leary, Frederick F. Strong, Charles B. Darling, N. Herbert Grant, Edward A. Pease, D. H. Craig, Francis D. Donoghue, L. E. R. Reid. It is further proposed to constitute a chair of Climatology and Diseases of the Lungs, a matter of great importance in New England where pulmonary tuberculosis is so prevalent and Edward O. Otis A.B., M.D., of Boston, visiting Physician to the Mass. Free Home for Consumptives,

Physician to the Boston Dispensary Department of Tuberculosis of the Lungs, has been nominated to this important position.

During the year favorable arrangements have been made in virtue of which students of this School can receive instruction in obstetrics at the maternity clinics connected with St. Mary's Hospital and the Tremont Dispensary. The following resignations have been received : Dr. H. B. Chandler has resigned as Professor of Ophthalmology, and Dr. W. S. Boardman as Lecturer on Laryngology.

Gifts of books have been received by the Library of the School from Drs. Bertram, Ruddick, Thayer and Williams.

Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE MEDICAL SCHOOL,

Boston, Mass., September 18, 1901.

THE DENTAL SCHOOL

THE DENTAL SCHOOL.

To the President :

It is with high satisfaction that I herewith submit to you, the report of the Dental School for the year 1900-1901. In the assumption of this School in 1899, it was believed by the authorities of the College that an unusual opportunity existed for the advancement of Dentistry as a science, and the endeavors of the Faculty have been steadily directed to the one aim of making Dentistry a department of Medicine instead of an allied branch. The result of these efforts has been of the most gratifying nature and I feel that I may with propriety congratulate the Trustees of Tufts College, not only upon the possession of the best and largest Dental School in New England, but also upon a School which is leading the way in the truest development of this great branch of preventive medicine. As a result of this expansion it was unanimously voted by the Faculty to recommend to the Trustees the prolongation of the course to four years. This action of the Faculty has been duly ratified and all students entering the School in 1902 and after, will be required to devote four full years to the study of Dentistry. In this extension of the course our School is the second School in the country to adopt these advanced requirements and it is gratifying to learn that the National Association of Dental Faculties has voted to demand the same advanced standard after the year 1903.

The work at the Infirmary has been of the high standard of previous years. Nearly thirty thousand treatments have been made in this institution during the past session; the recipients of these benefits have been largely children and it is hoped that a systematic examination of school children will be inaugurated in the public schools of Boston.

in the near future, thus extending the benefits of Dentistry to a class of the community most largely in need of the services of institutions of this nature. During the previous year, advanced students of this institution have been assigned to extend the benefits of Dentistry to the poor patients of several of the insane asylums and other charitable institutions. In the Infirmary of the new building, special attention has been directed to the introduction of asepsis as applied to Dentistry. Aseptic chairs, cuspidors and brackets have been especially constructed for this School; steam sterilizers are provided for the disinfection of instruments and surgical cleanliness is aimed at in a manner hitherto unattempted in the practice of Dentistry. This application of the germ theory to Dentistry is believed, by the authorities of the School, to be the greatest advance in Dentistry of recent years.

The number of students connected with the School is the largest in the history of the College, notwithstanding the fact that thirty per cent. of the applicants for admission were rejected in entrance examination.

Respectfully submitted,

HAROLD WILLIAMS,

Dean.

TUFTS COLLEGE DENTAL SCHOOL,
Boston, Mass., September 18, 1901.

THE BROMFIELD-PEARSON
SCHOOL

THE BROMFIELD-PEARSON SCHOOL.

To the President :—

The special course of the School has not been modified during the past year. Six students have received instruction in this preparatory department, and the four courses in Mechanic Arts have been attended by fifty-nine students of the Engineering Department of the College.

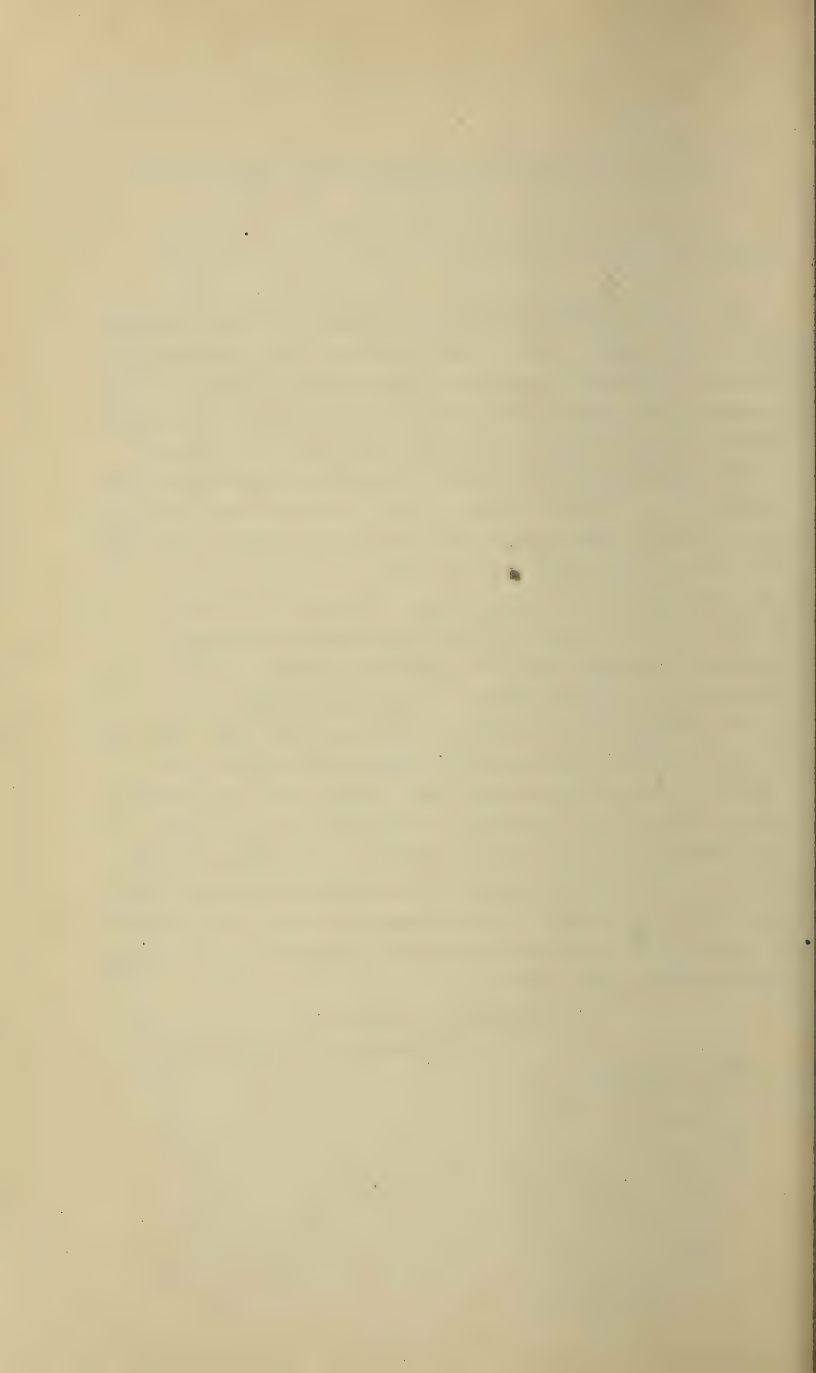
The machine shop equipment has been increased by the addition of a 12inch Reed lathe, a Brown and Sharpe cutter grinder, and a twist drill grinding machine, together with small tools and attachments. A metal shear has been placed in the forge shop. Another 10 kilo watt dynamo has been built in our shops from a design by the students, and thus we are provided with a second machine for our lighting plant. This was much needed, as we were dependent on a single dynamo for the lighting of the Bromfield-Pearson Building and Robinson Hall.

During the coming year, our shops will be severely taxed to supply the necessary instruction to students of the College who are now required to take these courses. In order to meet this demand some additions to our equipment will be required. Extra floor space may be obtained by moving our engine to the Power Station, and driving our machinery by motors.

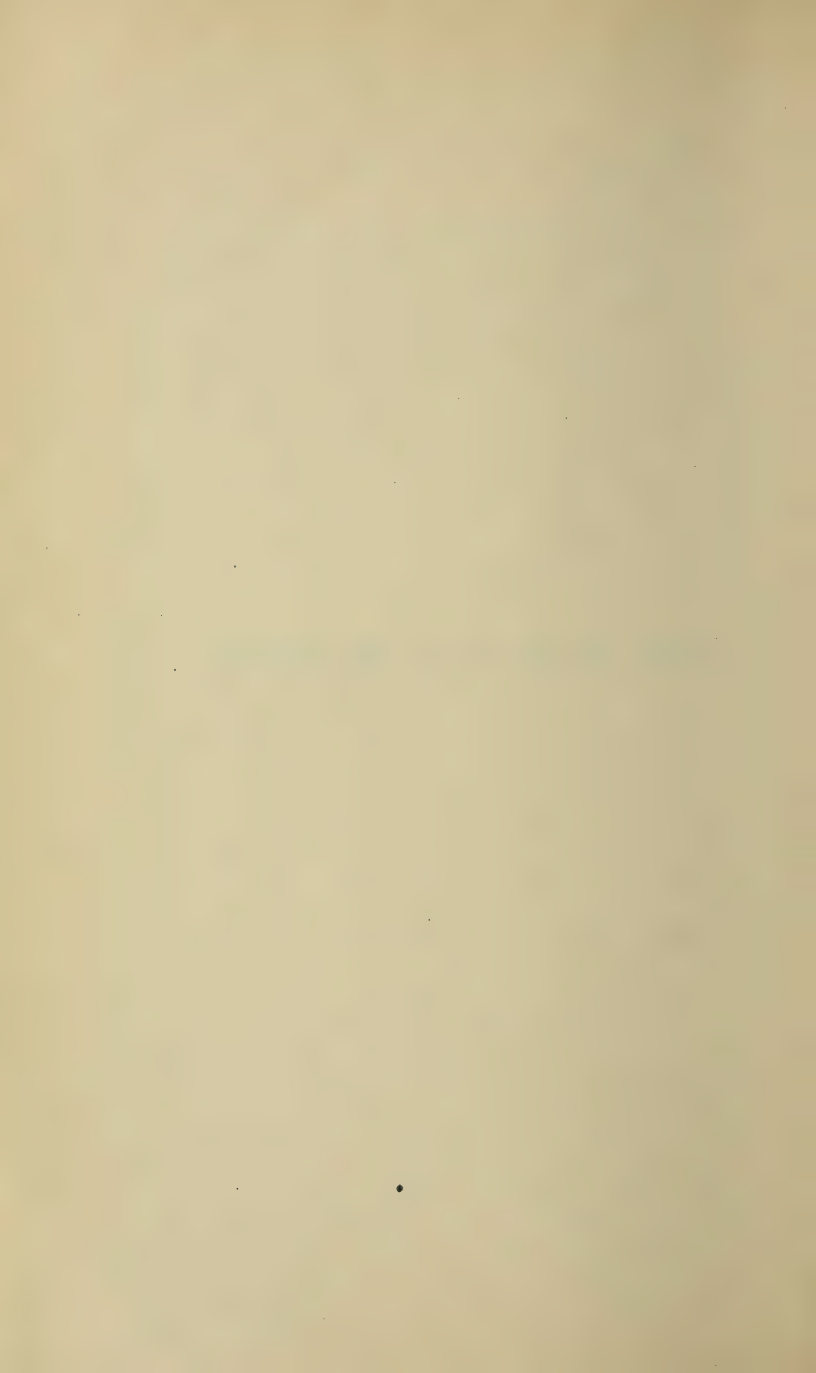
Respectfully submitted,

GARDNER C. ANTHONY.

TUFTS COLLEGE,
September 18, 1901.



THE BARNUM MUSEUM



THE BARNUM MUSEUM.

To the President :—

I have the following report to make of the condition of the Barnum Museum for the College year 1900-1901.

The exhibition collections have not been changed essentially since my last report. Considerable work, however, has been done on the reserve and teaching collections. New trays have been obtained and the geological and parts of the conchological collections have been placed in these and properly arranged. In this work Dr. A. W. Grabau has been of great assistance since his knowledge of palæozoic fossils has enabled us to straighten out a large part of our specimens from the rocks of this period.

Additions to the Museum have been derived from the following sources :

Arthur F. Gray, 11 cretaceous fossils from Paita, Peru ; Mrs. Geo. T. Knight, confederate money, postage stamps and pieces of battle flags from the civil war ; Prof. Arthur Michael, two Cambrian trilobites from Mt. Stephan Field, British Columbia ; U. S. Fish Commission, 29 species, 39 specimens of fish from Puerto Rico, 67 species, 137 specimens of fish from the United States ; Dr. E. L. Twombly, skin of black snake ; Prof. W. L. Hooper '77, calcite, tremolite, chrome garnet and amianthus from Brompton, Canada ; Gilman W. Brown, specimen of Gila monster, *Heloderma horridum*, from Arizona ; Harpswell Laboratory, numerous specimens from South Harpswell, Maine. Besides these the janitor, Mr. Charles Barrett, has mounted for the Museum, skeletons and skulls of several animals, among them the Belgian hare, Anolis, painted tortoise, snapping turtle, short tailed mole, seal, Boston terrier, wild cat and horse. He has also stuffed several animals for our collection. Many of these specimens were

presented by him. He has also repaired and remounted some of the specimens already in the collection.

The Library in the Museum has shown its usual growth, and now includes 1467 volumes and 3868 pamphlets and parts of periodicals, an increase of 197 volumes and 714 pamphlets and parts during the year. We are indebted for gifts to the Library to Drs. E. C. Bolles, W. H. Rud-dick, A. W. Grabau, A. S. Packard, V. Sixta, G. M. Winslow and Mr. A. F. Gray.

Respectfully submitted,

J. S. KINGSLEY,

Director.

TUFTS COLLEGE,

September 18, 1901.

THE GODDARD GYMNASIUM

THE GODDARD GYMNASIUM.

To the President :—

The past year has again demonstrated that our students appreciate the value of physical exercise when offered with modern facilities.

The usual physical examinations were given to underclassmen and others who desired, and were made a basis for special exercises for the individual, in addition to class work given to all. The lateness of the daily hour for physical training became a hindrance to many, especially to those students who have continued their residence at home. To help remedy this condition a morning class was started which was well attended.

Considerable interest was manifested in boxing and a class was formed under a careful and competent instructor. The department puts much faith in the value of recreative and competitive games when held subordinate to the broader basis of physical training, and in addition to other games, a modest beginning was made in scientific basketball which proved here, as elsewhere, to be the most interesting indoor sport.

I need only mention that the cage, the running track, and the appliances peculiarly athletic, were continually in good use. The Director experienced a great need of competent student assistants regularly appointed, since the concentration of the work forbade much individual attention. We are pleased to believe that this need has been met for the current year. It is again necessary to add that the use of the same building for physical exercise

by both men and women students, has been a serious loss to both.

Respectfully submitted,

CHAS. C. STROUD, M.D.,

Director of Goddard Gymnasium.

TUFTS COLLEGE,
September 18, 1901.

THE SUMMER SCHOOL OF
CHEMISTRY

THE SUMMER SCHOOL OF CHEMISTRY.

To the President:—

Nine students were in attendance. Of these, three were students in Tufts College, one from the Tufts Medical School, and five from outside the College. The same courses were offered as in previous years. The Summer School was fortunate in again having Dr. Leighton as an instructor, and he did nearly all the teaching work of the term. It is noticeable that the falling off from last year in the attendance at the Summer School is due mainly to the college students. There were fewer of them than in previous years. The same thing holds true for the college year in the Chemical Department.

Respectfully submitted,

FRANK W. DURKEE.

TUFTS COLLEGE,
September 18, 1901.

APPENDIX

THE OPENING OF THE NEW MEDICAL AND DENTAL SCHOOL BUILDING.

The new building for the Medical and Dental Schools was opened with due formality in the presence of the Trustees, the Faculty, the Alumni, members of the Massachusetts Medical and Dental Societies and a large company of the friends and promoters of medical and dental education, on the third day of October. Hundreds of people availed themselves of the opportunity to examine the building and to admire the completeness of its equipment and facilities.

The location of the building is all that can be desired ; in close proximity to the Fenway Park, it is surrounded by open space ensuring an abundance of light and excellent sanitary conditions. It is also conveniently near to the hospitals and dispensaries.

The exercises were held in the spacious amphitheatre which was completely filled. Prayer was offered by the Rev. Edwin C. Bolles, Ph.D., D.D. ; after which the following addresses were made.

ADDRESS OF PRESIDENT CAPEN.

Ladies and Gentlemen :—

The occasion which brings us together marks an important step in a brief but somewhat remarkable history. In the summer of 1893 a small company of physicians who had had successful experience in teaching medicine, appealed to the Trustees of Tufts College to recognize them as a Medical Faculty. After due consideration of the importance of the undertaking and a careful survey of the

field which such an enterprise must occupy, it was decided to grant the request. The school was opened in the autumn of that year at number 188 Boylston Street, in a building belonging to Tufts College, with an enrolment of eighty students. This was a small but encouraging beginning and the growth from that point has been steady and rapid. It was perceived almost from the outset that ampler quarters must be secured to meet the growing necessities of the school.

In 1896 the Trustees purchased the property of the Free Baptist Society at the corner of Shawmut Avenue and Rutland Street. The building, after careful study, was completely reconstructed and provided with the requisite lecture rooms and laboratories, together with all the needful appliances for modern medical instruction. The building was formally opened in the autumn of 1897 and the School, after a temporary sojourn of one year in the old Chauncy Hall School, was transferred to it. We fully believed that the provision we had made would be sufficient for at least a quarter of a century. This very likely would have been the case if we had had only the interests of the Medical School to consider. But we were scarcely more than domiciled in our new quarters before a fresh demand was made upon us.

The Boston Dental College, an institution with an honorable record of thirty years, found itself suddenly in a position of embarrassment, due to the fact that the advance in dental education rendered imperative a more extended course of instruction in anatomy and physiology than the School could command the facilities for giving. The Trustees of the Dental College turned to the Trustees of Tufts College for relief; first, through supplementary instruction, which was given; and secondly, through a transfer of their property and chartered rights. The fact that Tufts College possessed a well equipped Medical School seemed to render the contemplated action desirable. Application was made to the general court for authority to the Trustees

of the two institutions to carry out their proposed agreement. The Legislature, in the spring of 1899, passed an act giving this authority, and the consolidation was effected immediately.

No sooner had Tufts College assumed this new responsibility than it found itself straitened for room in which to do its work. At first it was thought that the difficulty could be removed by erecting a building for the Dental School at a point not far from the Medical School. When, however, Tufts College entered the market for a site, the price of land became exorbitant. After several ineffectual efforts, it was forced to consider whether it would not be better to change its plans altogether, abandon its location on Shawmut Avenue, go to a quarter of the city where an abundance of ground could be obtained at a reasonable price, and bring the two Schools into the closest possible contact with each other. This is what we have done. Here we have a single composite structure, covering some fifteen thousand square feet of land, with arrangements so that where courses of instruction for dental and medical students are co-incident, they can be pursued together, in the same place and under the same teachers.

At this point we lay particular stress upon our view of the very intimate relation between medicine and dentistry. Ever since dentistry in this country came to be considered a serious pursuit of professional grade, it has travelled a different road from medicine, though sometimes this road has been clearly parallel with that of medicine. During portions of its history, no doubt, some of the most important achievements of dentistry have been largely mechanical. The work that falls immediately to the hands of the dentist is of such a character superficially that it has given rise naturally to the notion that has long prevailed with eminent practitioners, and still prevails in some departments of the profession, that the chief requirements of the dentist are deft fingers and a good eye. Any man who has these endowments can acquire the art of excavating a cav-

ity with precision and filling it neatly and firmly. He may become highly skilful and even artistic in other and more difficult parts of the work often demanded of him. The more enlightened members of the profession, however, know that this is not dentistry. The immense progress that has been made during the last twenty-five years in anatomical and physiological science has opened vast fields of knowledge just as important to the dentist as the physician. Indeed, this advance has shown that dentistry is only a branch of medicine after all, as it was anciently regarded; some are ready to affirm that it is a specialty of medicine, as much so as ophthalmology, laryngology or otology, and that, therefore, the dentist who aims at professional merit and success must be thoroughly grounded in the principles of anatomy, physiology, pathology, bacteriology and therapeutics.

At all events, this is our belief. This is the motive of the arrangements which we have made here. We have assumed that a considerable portion of the training of the dental student should be identical with that of the medical student; and that there may be opportunity for this we have lengthened the course leading to a degree in dentistry from three years to four years. All who enter this School after this year will enter upon a four-years' course. The same plans go into effect this year in the Dental School of Michigan University, and there can be little doubt that in all, or nearly all, dental schools this plan will be found very soon to be essential.

In both departments we have set up a lofty ideal. We are trying to reach the best possible achievement. We are aiming to make the most substantial contribution to the health and happiness of the community. We do not mean for a moment to lose sight of our responsibility to the world around us and the age in which we live.

We shall not overlook the fact that there are two sides to our work; the practical and the theoretical. First of all there is the side that brings the practitioner face to

face with disease, with pathological conditions which actually exist and which exist in human beings. Our aim is to make the pupil understand what this means, and to impress upon him the importance of preparation for so great a duty. The good physician, the good dentist, the man who exercises the healing touch, the man who goes to men and women in their distress and restores confidence and gives comfort must ever be the noblest product of the School. But there is also the other side of our work which reminds us that all sound practice rests on verified or verifiable knowledge. The physician or the dentist cannot shut the door of the laboratory behind him and be sure that he walks on solid ground. He must go back constantly to the foundation principles on which his professional effort reposes. Just as the jurist must have, at least, at his fingers' ends, all the decisions of all the courts in all the ages of Anglo-Saxon development, and must also be familiar with all the great political and social movements of the race, in order to give a wise opinion or adjudicate in a case of high consequence; just as the man of God, in order to revive hope, kindle faith and carry comfort to the despairing and sorrowing, must go from his own closet of spiritual communion with an actual experience of the presence of the Infinite, so must the practitioner of both dentistry and medicine in every malady that demands his skill, go to the bedside or the operating chair from the laboratory, where he has confronted the facts and laws of morbid being and where he has seen unrolled before his own eyes some of the deepest mysteries of nature. We desire that every student whom we send out shall have the ability to test by experiment every advance that is made in medical knowledge and we shall try to make him capable of carrying on for himself independent biological investigation and research. These are the aims of all these facilities which we have thrown open to your inspection today.

This Building has been erected by the Trustees of Tufts College. It is proper, therefore, that they should, by due formality, transfer it to the Medical and Dental Faculties. I have the honor to present the Rev. Dr. Hamilton, Chairman of the Executive Committee of the Trustees, a member also of the Building Committee, who will perform this service.

The Rev. Dr. Hamilton, Chairman of the executive Committee of the Trustees, in transferring the Building to the Medical and Dental Faculties spoke as follows:

ADDRESS OF REV. F. W. HAMILTON, D.D.

Mr. Dean:—

In performing the pleasant duty which falls to me to-day, it is fitting that I should make some expression of the regard and esteem felt by the Trustees of Tufts College for the gentlemen of the Faculties which you represent. We have not been unmindful of the zeal and devotion which you have always shown in the work of the Schools. From the beginning it has been the aim of the Trustees to make these Schools second to none in the field of professional education, to provide instruction of the highest character and facilities for the best and most modern training and research. In all these matters we have always found the desires of the Faculties seconding and even outrunning our own.

Our years of work together have convinced the Trustees of the large demand in this community for the services of these Schools and the imperative need of enlarged quarters and improved facilities. We have, therefore, provided this spacious building in which we are assembled today. We have spared no effort to make it complete in every way and to equip it in the most thorough manner possible with laboratories, infirmaries, lecture rooms and all appli-

ances for scientific work. And now, in the name of the Trustees of Tufts College, I deliver this building to you and the Faculties of Medicine and Dentistry which you represent, for your use and occupancy, in full confidence that you will make the allied Schools a credit to this community, an important contributor to professional education and an honor to Tufts College.

ADDRESS OF DEAN WILLIAMS.

Dr. Harold Williams, the dean, replied on the behalf of the Medical and Dental Faculties.

Mr. Chairman of the Executive Committee :—

In behalf of the Medical and Dental Faculties I accept this trust, and it shall be our endeavor to so conduct the School that it will be a credit to the College and to the Commonwealth. And now

Ladies and Gentlemen :—

It is my privilege to welcome you to this new building, dedicated to-day to the advancement of medical education; to the promotion of those branches of knowledge which have contributed more than all others to the health, the happiness, and the welfare of mankind.

Unlike other branches of higher education, which chiefly aim to prepare the student for the peculiar duties of technical professions, medical education stands for something distinctly broader and more complex. "The physician," saith Hierophilus, "is the hand of God," and the education of the physician means not only the inculcation of such knowledge as shall train him to minister to the sufferings of the sick and the injured, to enable him to pilot the vessel beaten by the storms to its safe harbor, or perchance to guide it through still waters

to that "other shore," but also does it mean the education of the teacher, that one who, in his own turn, is to educate the public upon the laws of health and physical well-being; upon the methods of the prevention of disease as well as the cure thereof, and upon the progress of medical knowledge, especially in so far as such advancement bears upon questions relating to the public health. It further stands for the carrying on of scientific research and investigation, and it should ever be remembered that it is only through the medium of the medical schools that the wonderful progress of the past has been possible. So much has been written and so much has been said upon what the study of medicine has accomplished in the past for the benefit of mankind that I have not the courage to say to you, in the words of Pope, "Let us together beat this ample field." I would simply remind you, in passing, of the enormous benefits which medical study has conferred upon humanity in its march through the past centuries of the Christian era. I would simply remind you of the security of your lives now as compared with the precariousness of life in former times; in the sixth century, for example, when the Justinian Plague swept over Europe, at which time it is estimated that one-half the inhabitants of the Eastern Empire perished either of the plague or of the destitution which followed in its train; of the Black Death of the 14th century which destroyed one-fourth of the population of Europe; of the Great Plague of London, so graphically chronicled by DeFoe, from which nearly seventy thousand persons perished; of the terrible ravages of Asiatic Cholera, of which, for example, one hundred and twenty thousand persons died in France in the single year 1832; of the frightful ravages of small-pox, which Macaulay characterized as the "most terrible of ministers of death," and of which disease it is estimated that in Europe in the century preceding that in which Jenner performed his first inoculation experiment upon James Phipp, fifty million persons died, to say noth-

ing of the blind, the deaf and the disfigured who survived the loathsome pestilence. Wholesale epidemics like these are impossible now in the light which has been shed by modern medicine upon the etiology and prevention of disease, and their gradual suppression has been entirely due to the advancement and application of medical knowledge. Indeed it may truthfully be said that there has been no great reform in public hygiene nor in the prevention of disease which has not been directly brought about by the advancement of medical education.

And not only is the indebtedness of the public to medical education illustrated by the suppression of such widespread epidemics as I have alluded to, but also is it strikingly shown by the prolongation of individual life. Justinian tells us that in the sixth century the average duration of human life was thirty years. In America and Europe, at the present day, it is between forty-five and fifty years. Of the relative enjoyment of modern life as compared with that of ages past, we have, of course, no means of accurate estimate, but one has only to read the words of Ambroise Paré upon the treatment of gun shot wounds with boiling oil, or of more recent writers upon the reduction of joints and various other surgical procedures before the day of anaesthetics, to form an opinion of what medical education has accomplished in the way of the avoidance of pain.

Medical education is, therefore, to be regarded, not only as that branch of education which prepares the individual for the practice of a profession, but also as that branch of education which conduces in the highest degree to the improved condition of the human race. As such it deserves the support of the entire community ; as such the dedication of a new building to the furtherance of such knowledge should be regarded as an occasion of public interest and congratulation.

The question is sometimes asked of me if indeed there was need of an additional institution of this nature in Bos-

ton where the wisdom of our great University has established a school of the highest standard of medical education to be found this side of the Atlantic. I might turn this question aside by quoting the words of Oliver Wendell Holmes that the "community uses up its doctors just as it wears out its shoes," or I might point to the names of the nearly five hundred students inscribed upon our School lists as answer. But as such replies might rightly be considered evasive, I will endeavor briefly to indicate some of the reasons on account of which it is for the good of the community and of the profession of medicine that a second medical school should be established within our borders. I am sure I need not allude to the dangers of monopoly, nor to the benefits of competition. Nor need I allude to the benefits of co-operation. These subjects are too well understood to demand more than a passing notice. I shall confine myself rather to dwelling upon the unusual advantages which Boston affords for the prosecution of medical study. In the first place, its size, as the second largest centre of population in the United States, contained within a fifty-mile radius, renders Boston peculiarly adapted for the study of medicine. Thanks to the great University to which I have alluded, this great district has a medical fraternity which in learning, in probity, in high scientific attainments, and in its advanced professional standards and ideals, is second to no branch of the medical profession in any portion of our country. From the great wealth and the public spirited generosity of its citizens, it is most richly endowed with institutions of every description for the care of the sick, thus affording unsurpassed opportunities for the bed-side teaching and actual contact with disease and injury without which medical education is of no avail. We have, therefore, in Boston in the highest degree, the three great requisites for medical teaching, the teachers, the pupils and the material with which to teach, and it is not venturesome to predict that Boston is destined to become a great centre of medical

education, as in the past it has been distinguished as a centre for other branches of training. To these special facilities may be justly added a wise and liberal conduct of municipal and state affairs protecting and fostering the teaching of medicine. It may further be said in reference to this question of the desirability of a new medical school that in the teaching of a great subject like that of medicine a wide difference of opinion must necessarily exist in regard to questions of policy and method. Among such questions may be enumerated the subjects of co-education in teaching; the degree of preliminary education desirable to prepare the student for the prosecution of his medical studies, embracing as this question does the age at which the graduate in medicine shall enter upon his professional career; the capabilities and requirements of different teachers; the degree of individual instruction to be furnished; the latitude to be allowed in the direction of special studies. The great question as to how far dentistry is to be regarded as a branch of medicine, as we are taught by the "Father of History" it was regarded in the earliest times, or how far it is to be regarded as a mechanical art and separated from its medical foster-mother, is a question which is rapidly forcing itself upon us for decision. For my own part, I should be glad to see the medical and the dental student receive exactly the same instruction in their first two years of study, with special courses in their third and fourth years, and I hope that something like this will be the eventual policy of the School.

Whatever may be the right side of these and other questions they must necessarily give rise to a difference of opinion, and so long as such a difference of opinion exists, so long will the establishment of a second school be needful—of benefit to the community and to the cause of medical education alike.

If we provide the highest opportunities for our sons, should the daughters, who demand our tenderest care, be banished to other cities to secure their medical training?

For this one reason alone it would seem that the establishment of this new School was urgently demanded. Women have practiced medicine from the earliest times. Probably they will always continue to so practice, and whatever views we may individually entertain as to their qualifications for such practice, the spirit of justice demands that we should offer them the same facilities as are afforded to the men. It is difficult to weigh the comparative values of benefits conferred, but certainly the bitterest opponent of the higher education of women would not have the temerity to question the illustrious service along the line of medical advance of such women as Fabricola, Florence Nightingale, Clara Barton, Elizabeth Fry, Frances Willard, or Dorothea L. Dix. Incidentally I trust I may be pardoned if I refer to the benefits bestowed by the School upon the City in attracting to it the five hundred students who otherwise must seek elsewhere for their professional education.

The establishment of this new School in the infancy of the twentieth century is of auspicious augury. At no time in the history of the world has medicine advanced so rapidly as in the past few decades, and indications certainly justify the prediction that the next generation will behold still greater achievements in medical progress. "*Spes et confidentia plus valent quam medicina,*" Galen assures us, and I may venture to predict, slightly twisting the meaning of this ancient writer, that we may all look forward with a hope and a confidence more valuable than drugs, to the greatest medical advancement in the next quarter of a century.

Of all the discoveries of medical science, the greatest, because of its widest application, is the evolution of the Germ Theory. This wonderful theory, the work of Vogel, Schulze, Pasteur, and many others, has pervaded every branch of the practice of medicine. It has revolutionized surgery, enabling tyros in the art to practice with impunity operations which would have staggered such past-masters of the guild as Parè, the Hunters, or Valentine Mott. It has

regenerated obstetrics, reducing the mortality from two to two-tenths of one per cent. In the practice of internal medicine, it bids fair to provide a still wider field of usefulness. Already we know beyond the shadow of a doubt the micro-organisms which are the underlying causes of such diseases as actinomycosis, anthrax, Asiatic cholera, cerebro-spinal meningitis, diphtheria, erysipelas, gonorrhoea, glanders, influenza, leprosy, malarial fever, Malta fever, plague, pneumonia, relapsing fever, tetanus, tuberculosis, typhoid fever, and the protean forms of pus infection. These specific pathogenic microscopic growths are as well known to the trained bacteriologist as are the plants of the field to the practical botanist. Many others will doubtless be identified in the near future as, for example the germs of measles, mumps, scarlet fever, and small-pox and germs of other generally admitted infectious processes. And it does not require much flight of the imagination to predict that other diseases still, regarded now as of questionable origin, as cancer, rheumatic fever, chorea, and various other affections, will shortly be included in the ranks of the germ diseases as a result of the enormous advances in bacteriological study now in progress. Nor has bacteriology stopped short in the discovery of germs which are the underlying causes of the affections enumerated above. It has already furnished us with remedies of the utmost value in the treatment of disease, the antitoxines of diphtheria and of relapsing fever, besides others of protective value. Of the value of the antitoxine of diphtheria, it is difficult for a practicing physician to speak without enthusiasm. Before the discovery of the remedy the practitioner was seldom confronted by a more frightful picture of human suffering than that presented by a hopeless case of laryngeal diphtheria and now in the light of modern medicine the vision of such a case is happily most rarely seen. In this connection it is a privilege to pay a passing tribute to the work of one of our Boston physicians, whose contributions to our knowledge of this disease entitle him

to a position in the foremost rank. Already by the application of our knowledge of the tubercle bacillus we have been enabled greatly to restrict the prevalence of consumption of the lungs. In 1882, when Koch announced his discovery of the tubercle bacillus, the death rate in Boston was forty-two per ten thousand ; in 1899 it was twenty-two per ten thousand. Indications point to the probability that another generation will see, not only a much greater decrease in this disease from the adoption of restrictive measures, but also a treatment effective against this, at the present, greatest enemy of the human race. Fifty years ago there were one hundred and fifteen deaths in Boston from small-pox. Ordinarily at the present time it is with difficulty that a single case can be found upon which to demonstrate the phenomena of the disease. Fifty years ago there were sixty-nine cases of typhus, or eight per ten thousand ; now a case is rarely or never to be seen. In the same way fifty years from now it will undoubtedly be as difficult to find a case of malaria from which to demonstrate to the student the wonderful little organism which lives in the red corpuscles of the blood and which is the cause of this disease. And following this discovery of Laveran of the plasmodium of malaria, has come the further knowledge that the disease is conveyed to human beings by female mosquitos of certain species ; also the knowledge of the means by which mosquitos may be exterminated and vast malarial districts be reclaimed. And again, by this discovery new vistas are opened respecting the transmission of diseases by the agency of insects, as, for example, the recent researches in regard to yellow fever.

Another contribution of the present generation is the physiological addition of the animal extracts to therapeutic knowledge. We are told as the greatest proof of his wonderful skill, that Hypocrates cured Democritus of insanity, an achievement which seems to us less remarkable in these days of the thyroid extract by the employment of which remedy intelligence has been restored to the imbecile

and the idiot. The study of animal extracts has also furnished us with remedies of the utmost value in hemorrhage from mucous membranes, and is a remedy of promise in certain forms of affections of the heart. In the thyroid extract we have also been provided with a remedy of almost specific value in that rare group of symptoms known as myxoedema and in certain forms of goitre. Before the discovery of the Röntgen ray, our clinical knowledge of the heart was based chiefly upon the sense of hearing; we "heard by the hearing of the ear, but now mine eye seeth thee." In internal medicine it is now possible not only to discover and locate foreign bodies within the organism and to study the nature of the injuries of bones and joints, but also are we enabled to inspect the condition of the diaphragm and of the heart and lungs.

In the widening vistas which the advance of medical education is opening to our view, allusion should also be made to the progress to be looked for from the study of medical psychology, especially in regard to its application to pauperism, degeneracy and crime. Another subject of promise which with propriety should receive notice in this connection is the study of comparative pathology—that study by which we become acquainted with the diseases of the lower animals and their relations and analogies as bearing upon the diseases of the human race. Such study is full of promise and already has richly contributed to the amelioration of the condition of mankind. These subjects, briefly alluded to, indicate how largely the public is indebted to medical education and how much it may look forward to as its progress advances, and we must look to the medical schools as the chessboards upon which these medical problems are worked out, and the scope of medical education should so widen as to instruct the public as to the importance of its co-operation in the support of the medical school of today.

I have said so much in regard to medical education that I fear the dental practitioners in our midst may feel that

they have been overlooked. This is not the case. It is my intention to include in what I have said, the specialty of dental medicine, which I regard as one of the most important branches of preventive medicine and the Tufts College Medical School is proud to be among the first to so regard this great department of medical science.

It is a source of utmost satisfaction to me, Ladies and Gentlemen, to welcome you to this new building and to invite you to inspect its various resources and modern appliances. It is with difficulty that I can believe that the little School, which was inaugurated some seven years ago, having thrice outgrown the habitation provided for it, has at length settled down in these commodious and ample quarters. Our growth has been due to the devoted labors of an ardent and earnest board of instruction and to the sagacious policy of our Board of Trustees. It has been accomplished only through efforts and personal sacrifice. We have steadily aimed at the highest and we have pushed our way to the front. We have crossed our Alps and I feel that I now can say to you in the words of Hannibal, "Beyond the Alps lies Italy."

LIST OF PUBLICATIONS.

GENERAL CATALOGUE.

ANNUAL REPORT OF THE PRESIDENT.

CATALOGUE OF THE MEDICAL SCHOOL.

CATALOGUE OF THE DENTAL SCHOOL.

CATALOGUE OF THE DIVINITY SCHOOL.

CATALOGUE OF THE ENGINEERING DEPARTMENT.

CATALOGUE OF THE BROMFIELD PEARSON SCHOOL.

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